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ANALYTICAL REVIEW OF RESEARCH REPORTS ON SOCIAL IMPACTS OF WATER RESOURCES DEVELOPMENT PROJECTS

A REPORT SUBMITTED TO:
U.S. ARMY ENGINEER INSTITUTE FOR WATER RESOURCES
KINGMAN BUILDING
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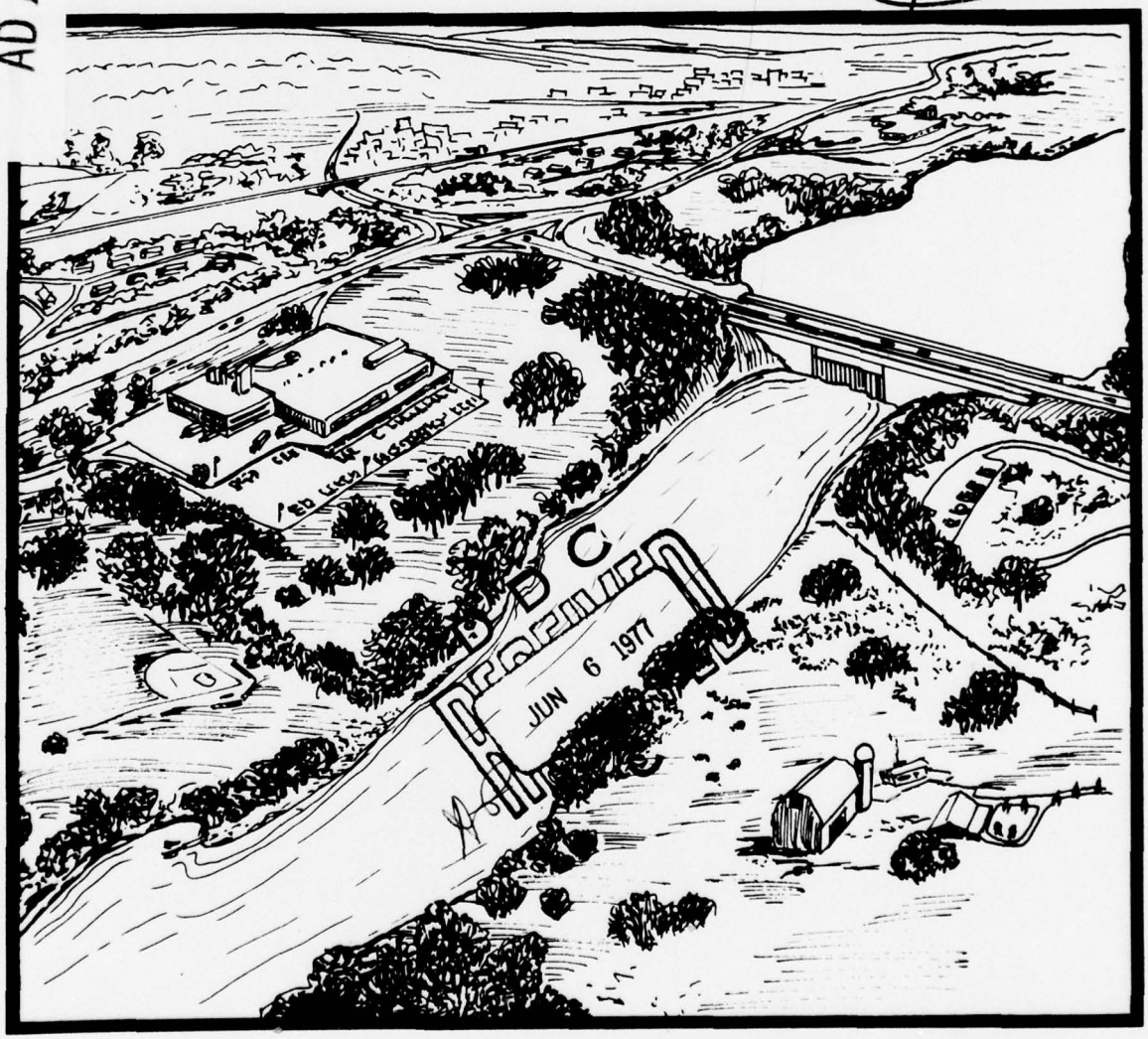

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MARCH 1977

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ANALYTICAL REVIEW OF RESEARCH REPORTS ON SOCIAL IMPACTS OF WATER RESOURCES DEVELOPMENT PROJECTS

A Report Submitted to:

U.S. Army Engineer Institute for Water Resources
Kingman Building
Fort Belvoir, Virginia 22060

Under

Contract No. DACW72-7T-M-0148

By

Henry Hitchcock

of

Program of Policy Studies in Science and Technology
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Washington, D.C. 20052

MARCH 1977

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This analytical review of research reports on the social impacts of water resources development projects is designed to assist planners in identifying and evaluating the impacts of project actions. It helps maximize the use of existing research results and methods by presenting summaries (of the research done to date) at various levels of generality. It also identifies the implicit patterns of research in the area and suggests questions for future research on the social impacts of project actions to address.

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A READER'S GUIDE

This analytical review of research reports on the social impacts of water resources development projects is designed to assist planners in identifying and evaluating the impacts of project actions. It helps maximize the use of existing research results and methods by presenting summaries (of the research done to date) at various levels of generality. It also identifies the implicit patterns of research in the area and suggests questions for future research on the social impacts of project actions to address.

The review has three levels of summary. The most specific level is the individual study summaries in Chapter 2. Each provides information on a specific study -- the project(s) studied, the methods used, and the impacts identified. The 38 studies were selected from an initial group of 90 because they identified social impacts that had occurred in relation to specific projects. If a specific study is desired, NTIS numbers are provided for most of the studies. Where no number is given, contact the performing organization.

The next level of summary provides brief synopses of the important information contained in the individual study summaries. The summary of study characteristics (Chapter 3) and the impact summary (Chapter 4) contain two tables (3-1 and 4-1) and a figure (4a) which present the key points of the study summaries. Tables 3-1 and 4-1, which summarize information on study characteristics and impacts, are organized by study identification number. Together they constitute a complete compendium of the individual study summaries. Figure 4a organizes the impacts listed in Table 4-1 by project phase and impact category.

Let us say you wanted to know what impacts related to community cohesion had been identified in the construction period and how they had been measured. First you would turn to Figure 4a, which would tell you that study No. 34 identified one impact in that area. Flipping back to Table 4-1 you find that the impact is "lack of conflict over dam construction." You now have two choices -- you can get summary data on the method employed in study No. 34 from Table 3-1, or you can turn to the individual study summary for the full description of the study including a description of the method used to identify that particular impact. This is not the only way to use the tables; you could pick a type of project or a particular method and trace through Tables 3-1 and 4-1 the types of impacts found in relation to them. The combination of Table 3-1, Table 4-1, Figure 4a, and the individual summaries provides multiple ways to access the social impact information contained in the study summaries; the more the tables are used, the more uses will be found for them.

The third and most general level of summary discusses the patterns formed by the characteristics and impacts presented in Tables 3-1 and 4-1. The analysis of these patterns (found in the distribution sections of Chapters 3 and 4) points up several gaps in the research on social impacts. It is important to recognize these gaps and the forces which have created them in order to prevent their repetition in future research. Chapter 5 presents some questions designed to correct the tendency to follow narrow research interests and neglect the broad range of a project's social impacts.

CHAPTER 1: INTRODUCTION

The analysis of the social impacts of water resource development projects has recently become an important part of water resources planning. Increasing numbers of laws and regulations, such as Corps Regulation ER 1105-2-240 are requiring planners to evaluate the possible effects of their actions on the social well-being of a local area, a state, and the nation. One result of this interest in the social impacts of water resources development projects has been a proliferation of research on the subject. As is normal in a new field lacking an accepted conceptual foundation, this research is of widely varying utility to the planner in evaluating a project's social impacts.

The purpose of this analytical review is to organize and analyze the existing research on the social impacts of water resources development projects so it can be easily used by water resource planners. By concentrating on studies which have identified impacts in post-audit analyses, the intent is to provide a guide to what impacts have been linked to which specific project actions. The specific objectives of this review are:

-- Maximize the use of existing research methods and results by planners especially as regards the linking of impacts with specific project actions;

-- Identify the implicit patterns of current research to (a) enable the planner to evaluate the quality of existing knowledge about social impacts and (b) help the planner recognize the areas of greatest uncertainty in evaluating social impacts;

-- Suggest future directions for research in this area designed to increase the quality of knowledge and thereby reduce the uncertainties of evaluation.

The method used to meet these objectives is the "case survey method" described by Robert Yin and Karen Heald of Rand Corporation in their March 1975 paper "Evaluating Policy Studies by Using the Case Survey Method." The case survey method is a literature review technique which allows one to reliably operationalize qualitative evidence found in a wide variety of case studies. The key to the technique is the application of a pre-designed format to each case study; the focus of the format is on the specific issues described in the report rather than merely stating conclusions. It is particularly applicable to areas where research does not follow a common paradigm as is the case with the social impacts of water resources development.

The specific steps used in this particular application of the "case survey method" were

-- Identification of relevant studies,

-- Selection of case studies,

-- Application of a pre-designed format.

The relevant studies were identified through several bibliographies on the social impacts of water resources development projects:

Water Resources -- Social Impact, DDC Bibliography (4/5/76)

Lehmann, Edward J. Planning and Impact of Water Resource Programs, NTIS Bibliography (4/75)

Lehmann, Edward J. Public Opinion and Sociology of Water Resources Development, NTIS Bibliography (4/75)

Hamilton, H. R., et al. Bibliography on Socio-Economic Aspects of Water Resources, U.S. Department of the Interior/Office of Water Resources Research (3/66)

Social Impact of Water Resources, U.S. Department of the Interior/Office of Water Resources and Technology Bibliography (1976)

Economic Studies Section and Environmental Resources Branch Portland District Corps of Engineers. Bibliography of Social and Land-Use Impacts of Water Resource Developments (9/76)

Cooke, T. J., et al. Communications for Urban Water Resources Management -- A Review and Annotated Bibliography, W. E. Gates Associations, Inc. (2/74).

Any study performed after 1961 whose abstract discussed the social impacts of specific water resource development projects was chosen. Over 90 studies were selected on the basis of their abstracts.

The case studies were selected for review on three criteria:

-- Post-Audit Focus

-- Social Impact Emphasis

-- Specific Project(s) mention

Post-Audit Focus: Only studies which discussed impacts that had occurred or were occurring were included. This eliminated many of the prospective studies that are connected with planning studies and environmental impact studies. The reason for excluding prospective studies and environmental impact studies. The reason for excluding prospective studies was the desire to provide the planner with proven impact not conjecture, the rationale being that proven impacts provide a better basis for evaluating potential social impact.

Social Impact Focus: The exact composition of a social impact if not defined anywhere in the literature. For the purposes of this study we followed the guidelines of the Principles and Standards and Corps regulation ER-1105-2-240. Impacts on income distribution, population mobility, population density, emergency preparedness, community cohesion, local governments, recreation and leisure opportunities, educational and cultural opportunities, public health, community growth and stability, and the displacement of people were the major types of impacts considered.

Specific Project(s) mention: To be included in the review, the research had to refer to specific water resource development projects. The projects did not have to be identified; a study of all the water resource projects in Wyoming was accepted. But the projects had to exist either physically or in the planning process. Studies of attitudes about water or water resources in general were not included nor were studies of specific events such as floods (unless some mention was made of a specific flood control project). The key concept in this selection criteria was that of imminence; the project had to have been real to the people being impacted.

Using these three criteria, 38 studies were selected from the 90+ studies identified in the bibliographies. A pre-designed format for reviewing the research was then applied to each study. This format (described in more detail in Chapter 2) covered the methodology and techniques used to identify impacts and the specific impacts identified.

The remainder of the review is based on the application of the format to the research reports which is presented in Chapter 2. Chapter 3 summarizes individual study characteristics - when the research was done, who did it, what projects were studied, what methods, techniques, and data sources used. Chapter 4 completes the summary of the individual studies with a review of impacts by project phase and impact type. Both Chapters 3 and 4 analyze the distribution of study characteristics and impacts. Chapter 5 presents questions for future research on the social impacts of water resources developments which are intended to fill in some of the gaps in the existing research. The summary chapter reviews the current state of research on social impacts, its strengths, its weaknesses, and its prospects.

CHAPTER 2: INDIVIDUAL STUDY REVIEWS

These reviews are the data base for this review of research on the social impacts of water resource development projects. Subsequent chapters summarize their content but do not fully convey the wealth of material found in them. Selected from a larger bibliography dealing with the social impacts of water resource development projects, the 38 studies reviewed met the criteria outlined in the above chapter: post-audit, social impacts, and specific project(s).

Once a study was selected for review, a pre-designed format was applied to elicit the pertinent information relating to social impacts. The reviews are presented in the format. The first step was to record specific bibliographic data -- author, title, place and date of publication. Information was also collected (where available) on disciplinary background of the author and the source of funding for the research.

The objectives of the research were taken verbatim from the text of the reports. Very little attempt was made to interpret the researchers' intent. The data on the water resources development projects discussed was limited to that presented in the research report. In a few cases description of the project -- size, storage capacity, drainage area, type of structure -- were included. In some study reviews, descriptions of the local area social structure, economy, and geography were presented. Most of the reports were explicit about the purposes of the project they were studying and the project phase with which they were concerned.

The next part of the format relates to the methodology employed by the researcher. In the section on general method, the overall conceptual framework of the research was reported. If a researcher tested a hypothesis, developed a model, defined variables, or applied a particular theory, this section noted that fact. Specific techniques for measuring impacts and data sources used in measuring impacts were reported under techniques and data used.

The remainder of the format focuses on the heart of the review: the impacts of the water resource development projects. The impacts reported here are those identified as significant by the research report. In only a few cases were impacts reported that were not recognized by researchers as significant. The intent was to report what had been identified as social impacts, not to interpolate what impacts should have been identified.

For each impact identified, several characteristics were discussed. First the groups impacted were identified. In many cases the identification of impacted groups was implicit in the measurement of the impact. Few researchers were explicit about the range of groups affected by the identified impact. Next, the project phase

in which the impact took place was reported. The format used three project phases: pre-construction, construction, and post-construction. Dividing impacts into phases was fairly straightforward since few researchers identified impacts bridging more than one phase. The indicators used to measure the impact were reported, where available. Again, few of the reports were explicit about which specific indicators or data sources related to which specific impacts.

The most information on the identified impacts is in the next two sections: extent of impact and cause and process. The extent of impact refers to the efforts the researchers made to gauge the magnitude and direction of the impact on the impacted groups. The cause and process section discusses any attempt to explain how the impact occurred and why it occurred. More often, the cause of the impact received greater attention than the process whereby the impact actually occurred.

The remainder of this Chapter contains the results of the application of this format to the 38 selected reports on the social impacts of water resources development projects.

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 1

NTIS# PB-223-375

STUDY

TITLE: Private Sector Reaction to Normal Political Institutional Procedures and Outcomes when Water is an Issue

AUTHORS: Albert, Harold E. (P.I.)
Res. Asst. David Hall

INSTITUTION: Water Resources Institute, Clemson University

BACKGROUND: Albert - Political Scientist
Hall - Agricultural Economist

PUBLICATION DATE: June 1973

OTHER REPORTS:

FUNDING GROUP: DOI/OWRR and South Carolina Water Resources Commission

FUNDING LEVEL:

FUNDING DATES:

STUDY OBJECTIVES: In light of opposition to locating a chemical plant, looking at Govt.-Private sector interaction in relation to a water resources development.

1) Establish points of contact between gov't and private sector.
2) Determine relationships between groups, and government.
3) Discover how interest groups get government support.
4) Pinpoint possible breakdown in communication between government and private sector.

PROJECT

NAME & LOCATION: Location of a $200 million BASF chemical plant on the coastal area of South Carolina, near Victoria Bluff, and Hilton Head Island on the Savannah River (one of the two unpolluted estuaries of the east coast).

DESCRIPTION: Beaufort County, South Carolina. 18% of County area covered by water. Beaufort S.C. - A natural port that was never developed use water but no effluents. Considerable deep water dredging necessary (Corps) and 7 miles of railroad tracks. BASF needs 25-100 MGD from the Savannah River.

PURPOSES: Make die stuffs (one plant) and refine Petrochemicals - make thylene and other plastics raw materials from Naphtha - Sole chemical plant on coast from Baltimore to Louisiana.

PROJECT PHASE DISCUSSED: Pre-Construction

METHODOLOGY

GENERAL: Socio-Political case study. Reconstruct conflict over a particular water-related issue.

TECHNIQUES AND DATA USED: Files, public records, and interviews

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IMPACTS DISCUSSED

A) Interagency conflict

B) Coalition of interest groups to block plant

C) Formation of interest groups supporting the plant

D) Cancellation of intent to build

E)

IMPACT A: Conflict among state agencies on details of the plant site such as railroad construction and dock construction.

GROUPS IMPACTED: BASF, Inhabitants of Beaufort. The governor of South Carolina, State Highway Department, Low Country Regional Planning Commission, State Ports Authority.

PROJECT PHASE: Pre-Construction

INDICATORS:

EXTENT OF IMPACT: Numerous postponements in decision; no construction ever undertaken.

CAUSE AND PROCESS:

1) Differing interests of agencies (aesthetics vs. economics vs. zoning vs. disruption of recreation traffic to Hilton Head) lead to conflict.

2) Increasing costs in the face of a fixed price contract cause concern.

LINK TO OTHER IMPACTS:

IMPACT B: Coalition and formation of interest groups to block plant

GROUPS IMPACTED: Hilton Head and surrounding area residents, BASF, State officials.

PROJECT PHASE: Pre-Construction

INDICATORS: Participation in a symposium on common opposition to the plant. Admissions of joint strategy.

EXTENT OF IMPACT: Formation of a new citizens association. Alliance of citizen's association and developers. Environments from all over the U.S. ally with wealthy Hilton Head residents.

CAUSE AND PROCESS: Concern over pollution and possible damage to recreation industry creates concern.

LINK TO OTHER IMPACTS:

IMPACT C: Formation of interest groups supporting plant and opposing environmental interest groups.

GROUPS IMPACTED:

PROJECT PHASE: Pre-Construction

INDICATORS:

EXTENT OF IMPACT: Limited, Petitions supporting BASF get 10,000 signatures but BASF cancels anyway.

CAUSE AND PROCESS: State development board pushes to bring BASF into the area and counteract opposition.

LINK TO OTHER IMPACTS:

IMPACT D: Failure of BASF to locate in South Carolina

GROUPS IMPACTED: BASF, S.C. agencies, local residents

PROJECT PHASE: Pre-Construction

INDICATORS:

EXTENT OF IMPACT: Total Withdrawal

CAUSE AND PROCESS: BASF deterred by: Citizen opposition and resulting national (Federal Government) pressure. Caught in growing ecological concern [National] and in opposition to wealthy, influential residents of Hilton Head Island.

LINK TO OTHER IMPACTS:

Product of impacts A&B

IMPACT E:

GROUPS IMPACTED:

PROJECT PHASE:

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 2

NTIS# PB-200-725

STUDY

TITLE: The Function of Social Behavior in Water Resource Development

AUTHORS: Andrews, Wade and Geersten, Dennis

INSTITUTION: Institute for Social Science on Natural Resources and Center for Water Resources Research. Utah State University.

BACKGROUND: Andrews - Prof. of Sociology. Geersten - Res. Associate

PUBLICATION DATE: December 1970

OTHER REPORTS:

FUNDING GROUP: DOI/OWRR allotment funds

FUNDING LEVEL:

FUNDING DATES:

STUDY OBJECTIVES: Exploratory study:

1) Determine social psychological value patterns advancing or impending development of water as a resource.

2) Determine how basic cultural and social organizational arrangements are interrelated in motivations and attitudes and are instrumental in enhancing or impeding development and use of water

PROJECT

NAME & LOCATION

DESCRIPTION: Oneida Narrows Reservoir [Proposed] on Bear River 10 mi. N.E. of Preston Idaho 3,760 sq. mi. drainage area. Total capacity 375,000 acre feet, cost - $26 million. Honeyville Reservoir [Proposed] - On Bear River 4 mi. S.E. of Tremonton Utah drainage area 6,000 sq. mi. total capacity. 120,000 acre feet, cost 6 million. Enlarge existing Glendale Dam and Reservoir - Cost 4 million. Build several canals - Oneida Canal 104 mi. long cost $32 million, others aroun' 20 miles long, cost between $1-$2 million. Near Ogden,Utah, expect to divert some water to Ogden area primarily rural, agricultural, and Mormon.

PURPOSES: Oneida Reservoir and Canal - irrigation, wildlife management, municipal and industrial (Ogden) water use.
Glendale enlargement - irrigation.
Honeyville - Wildlife management, municipal and industrial (Ogden) water use.
All reservoirs somewhat for flood control and recreation.

PROJECT PHASE DISCUSSED:
Pre-Construction

METHODOLOGY

GENERAL: Exploratory - Survey Research
Theoretical interest = functional/dynamic relationship cultural values, social organizations, and social change interest in resistance to change. Also wish to aid public and private decision-making.

TECHNIQUES AND DATA USED: Random sample survey of household heads in middle and lower Bear River Basin. Interviews using open and close ended questionnaire (150 questions), 3 different residential categories: Metro-Urban; small town, and open country: Using mapseoment technique. Stratified sample of all three groups. Asks questions on characteristics, attitudes about social change, water politics, irrigation, and specific proposed projects.

IMPACTS DISCUSSED

A) Differing levels of awareness about proposed projects.

B) Low accuracy of knowledge about projects.

C) Farmers most interested in the projects.

D) Inequities perceived in differing degrees.

E)

IMPACT A: Differing levels of awareness about proposed projects.

GROUPS IMPACTED:	Residents of counties in river basin area.
PROJECT PHASE:	Pre-Construction
INDICATORS:	Answers to question "Have you heard of the Bear River reclamation project proposed for development of Bear River? Answer "Yes" denotes awareness.
EXTENT OF IMPACT:	Idaho residents (upstream) more aware of the project than Utah residents - residents of Franklin County [Location of Oneida Narrows project] most knowledgeable (9.5%). Middle basin counties of Utah next with 83% awareness. Utah counties have about 75% awareness.
CAUSE AND PROCESS:	Franklin leads because major dam has been proposed for that area. Utah also the scene of intense public activity by the Bear River Protective Association in opposition to the project.
LINK TO OTHER IMPACTS:	Only those aware of the project relevant to other impacts.

IMPACT B: Low accuracy of knowledge regarding projects.

GROUPS IMPACTED:	Residents of Bear River Basin Counties
PROJECT PHASE:	Pre-Construction
INDICATORS:	Responses to open ended question - What are they going to do to the Bear River? Responses judged by 3 researchers and member of the Bureau of Reclamation as to correctness and specificity of knowledge. Focus primarily on farmers who are shown to be most aware.

EXTENT OF IMPACT: Only 1/4 of Utah farmers and 1/5 of Idaho farmers have high level of knowledge. Farmers and non-farmers generally not clearly informed about the projects. Little difference between states on knowledge accuracy.

CAUSE AND PROCESS: Lack of active interest in project is responsible. Mass media cited by 57% as main source of information, friends, contacts, and neighbors second at 32.1%. Government agencies and meetings about 4-5% each.

LINK TO OTHER IMPACTS:

Farmers greater interest verified in Impact C making this finding particularly significant.

IMPACT C: Farmers the most interest in the project.

GROUPS IMPACTED: Residents of Bear River Basin Counties

PROJECT PHASE: Pre-Construction

INDICATORS: Level of knowledge, attendance at meetings, desire to become better informed, level of opposition or support for the project.

EXTENT OF IMPACT: Farmers better informed, two farm categories (open country and small town) main ones attending meetings (1/2 of each group) Few non-farm people attend meetings. 55% of farmers believe they actively attempted to become better informed compared to 35% open country non-farm, 22% small town non-farm, and 4% metro-urban. Farmers have lowest percentages of no opinion on attitudes toward projects.

CAUSE AND PROCESS: Main purpose of the project is irrigation so the farmers are naturally most interested. Members of the canal cooperatives significantly more active.

LINK TO OTHER IMPACTS: Farmers key figures in each impact

IMPACT D: Different degrees of opposition to the projects.

GROUPS IMPACTED: Residents of Bear River Basin Area.

PROJECT PHASE: Pre-Construction

INDICATORS: Response to questions: whether one area would be benefited more than another, whether the projects would help the water picture, whether they would be hurt personally.

EXTENT OF IMPACT: Most people felt projects would not hurt them personally. Less than 1/3 of the open country people see project as good. Over 1/2 of the metropolitan people favor it. Upstream residents much more opposed to projects than downstream residents. Bear Lake County - 66% it will hinder the water picture. Box Elder (Utah) County - 9.2% say it will hinder.

CAUSE AND PROCESS: Upstream residents see benefits primarily accruing to downstream people. Why open country people consistently stronger in opposition is not clear. Personal threat does not seem to be the basis for opposition.

LINK TO OTHER IMPACTS:

IMPACT E:

GROUPS IMPACTED:

PROJECT PHASE:

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 3

NTIS#

STUDY

TITLE: Identification and Measurement of Quality of Life Elements in Planning for Water Resources Development: An Exploratory Study.

AUTHORS: Andrews, Wade; David, Alten B., Lyon, Kenneth S. Madsen, Gary E.; Ros Kelly, R. Welling; Bower, Bruce L.

INSTITUTION: Institute for Social Science Research on Natural Resources, Utah State University.

BACKGROUND: Sociologist, Political Scientist, Economist, Sociologist, Sociologist

PUBLICATION DATE: April 1972

OTHER REPORTS:

FUNDING GROUP: Bureau of Reclamation/DOI

FUNDING LEVEL:

FUNDING DATES:

STUDY OBJECTIVES: Explore the benefits and costs of elements which may be contributing to the quality of life of people living in and being affected by a water development project area. Looking for means of identifying relevant variables and measuring them.

PROJECT

NAME & LOCATION: Central Utah Project - Includes parts of Unitah, Wasatch, Utah, Millard, and Duchesne Counties. Variety of Projects: Utah County - Aqueducts and Utah Lake, Wasatch-Strawberry Reservoir (being expanded) and Deer Creek Reservoir. Another is planned,

DESCRIPTION: Duschne Reservoir-newly in operation, Unitah-Steinaker Reservoir-in operation for nine years.

PURPOSES: Flood control, irrigation and storage.

PROJECT PHASE DISCUSSED: Pre-Construction, Construction, Post-Construction

METHODOLOGY

GENERAL: Four basic types of data used - Survey (*formal and in-depth formal*) Interaction with organized groups, and secondary sources.

TECHNIQUES AND DATA USED: *Interview schedule - exploratory*, combines open and close ended questions, general questions on aesthetics, work, leisure, level of living, and water resources. Various lists used to generate random samples for interviews - *irrigation, electrical hookups*, all water users, *telephone books*.

IMPACTS DISCUSSED

A) Reduction of anxiety over flooding.

B) Enhancement of aesthetic value of area.

C) Increased economic/social stability.

D) Enhancement of certain leisure activities.

E) Increased juvenile delinquency.

IMPACT A: Reduction of anxiety over flooding.

GROUPS IMPACTED:	Residents of Duchesne, Utah, and Unitah Counties.
PROJECT PHASE:	Post-Construction
INDICATORS:	Comparison of anxiety levels between counties with varying degrees of flood protection.
EXTENT OF IMPACT:	Farmers of Unitah County exhibit less anxiety than other two counties [2% high to 9% high in other two counties]. Non-farmers of Unitah slightly less anxious [61% - No anxiety to 51% and 59%].
CAUSE AND PROCESS:	Unitah County has had 10 years experience with the Steinacker Reservoir giving them a long time to realize flood control benefits.
LINK TO OTHER IMPACTS:	

IMPACT B: Enhancement of aesthetic quality of the area.

GROUPS IMPACTED:	Residents of Utah, Unitah, and Duchesne Counties.
PROJECT PHASE:	Post-Construction
INDICATORS:	Questions on: a) whether the reservoirs had enhanced natural beauty, and b) if emphasis should be placed on beautification of reservoir.

EXTENT OF IMPACT: All categories [farm and non-farm] show large majority feel reservoir has moderately or greatly improved beauty of an area (84%, 88%, 86%). Nearly half the sample (47%) felt more emphasis was needed on beautification.

CAUSE AND PROCESS: One factor contributing to large interest in aesthetic value is the fact that driving and sightseeing were the top ranked recreation activities by farm and non-farm groups.

LINK TO OTHER IMPACTS:

IMPACT C: Increased economic/social stability.

GROUPS IMPACTED: Residents of Unitah County.

PROJECT PHASE: Post-Construction

INDICATORS: Acres of land cultivated and irrigated, number of days reported working by farmers, average value of farm products, responses of residents to questions on income change.

EXTENT OF IMPACT: Residents feel incomes have raised 10-15%, irrigated land increases 26% while state as a whole decreases. Number of farmers reporting more than 100 days worked increases by 26% more than other areas. Average value of farm products increases 125% - rest of state 89%.

CAUSE AND PROCESS: Impact is a result of the project since there was no major agricultural change other than Steinacker Reservoir in the area for the ten years studied (1959-1969).

LINK TO OTHER IMPACTS:

IMPACT D: Enhancement of certain leisure activities.

GROUPS IMPACTED: Residents of Unitah and Wasatch Counties

PROJECT PHASE: Post-Construction

INDICATORS: Depth interviews with selected resident on general benefits and costs of projects; number of garden clubs formed.

EXTENT OF IMPACT: Few people in Vernal area of Unitah County had enough water for gardens before Steinacker was constructed. Now many people garden. A number of garden clubs have been formed. Winner of the Garden Show at last years Utah State Fair lives in Vernal.

CAUSE AND PROCESS: Increased water supply resulting from Steinacker Reservoir makes gardening more feasible.

LINK TO OTHER IMPACTS:

IMPACT E: Increase in juvenile delinquency.

GROUPS IMPACTED: People in Unitah County.

PROJECT PHASE: Post-Construction

INDICATORS: Comments of Law Enforcement Officials in Vernal Area and State Juvenile Authorities.

EXTENT OF IMPACT: Impression of growing juvenile delinquency, increased number of juveniles receiving traffic citations.

CAUSE AND PROCESS: Increased affluence of the area resulting from Steinacker Reservoir - means more young people own automobiles.

LINK TO OTHER IMPACTS: Direct result of Impact C.

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 4

NTIS# PB-234-318

STUDY

TITLE: A Preliminary Model of the Hydrologic-Sociologic Flow System of an Urban Area.

AUTHORS: Andrews, Wade; Riley, J. Paul; Colton, Craig W.; Shih, George B.; and Masteller, Malcolm B.

INSTITUTION: Institute for Social Science Research on Natural Resources and the Utah Water Research Laboratory, Utah State University.

BACKGROUND: Sociology and Hydrology

PUBLICATION DATE: April 1973

OTHER REPORTS:

FUNDING GROUP: DOI/OWRR

FUNDING LEVEL:

FUNDING DATES:

STUDY OBJECTIVES: Initial effort to develop a composite model of Hydrologic and Sociologic systems as relates to urban water resources planning: 1) Define problems of flood control in urban areas; 2) Identify hydrologic and sociologic components of these problems and linkages between them; 3) Evaluate available data and data collection procedures; 4) Develop concepts for a model of hydro-social systems; 5) Test, to a limited degree, the validity of model relationships.

PROJECT

NAME & LOCATION: Various hydrologic options discussed: Channelization and stream lining most discussed. Area studies: Eastern 1/2 of Salt Lake County-4 creeks that empty into the Jordan River which empties into Great Salt Lake. Population (1970) 131,882 - Close to CBD of Salt Lake City.

DESCRIPTION: Creeks are connected to canyon runoffs to the east. This and urban area make flood damage potential quite high.

PURPOSES: Primarily Flood Control..

PROJECT PHASE DISCUSSED: Pre-Construction

METHODOLOGY

GENERAL: Interested in developing a model of policy interaction with hydrologic options. Primary interest in developing conceptual model - not in testing [more testing expected in later volumes]. Testing - survey and secondary sources.

TECHNIQUES AND DATA USED: *Two random samples:* 1) *People whose property is* immediately adjacent to stream N=80; 2) People not adjacent to stream but in flood prone areas N=119 interviewed for attitudes and associated behavior relating to flood control. Close ended interview schedule.

IMPACTS DISCUSSED

A) Differing levels of opposition to proposed projects.

B)

C)

D)

E)

IMPACT A: Differing levels of opposition to proposed projects.

GROUPS IMPACTED:	People living adjacent to streams and people in flood prone area.
PROJECT PHASE:	Pre-Construction
INDICATORS:	Overt actions: writing letters, signing petitions, vocal protests, similar activities. Responses to survey questions.
EXTENT OF IMPACT:	Streamside sample closest to the city most opposed. Streamside sample closer to mountains less opposed. People not adjacent to streams but in flood prone areas least opposed to channelization or stream lining. Those who opposed the project more and took more overt action against it streamside (32%) flood prone (8%).
CAUSE AND PROCESS:	In the urban area, those of higher socio-economic status and who own more expensive homes are most in opposition to project; stream is an important part of their landscape. This is why people near mountains oppose--they are mostly of high socio-economic status. Stream not as important to people in flood prone areas but not on the stream.
LINK TO OTHER IMPACTS:	

IMPACT B:

GROUPS IMPACTED:

PROJECT PHASE:

INDICATORS:

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 5

NTIS#

STUDY

TITLE: Social Aspects of Flooding in the Urbanized East Salt Lake County Area.

AUTHORS: Andrews, Wade; Dunaway, William C.; Geersten, Dennis C.

INSTITUTION: Institute for Social Science Research on Natural Resources, Utah State University.

BACKGROUND: Sociologists

PUBLICATION DATE: July 1972

OTHER REPORTS:

FUNDING GROUP:

FUNDING LEVEL:

FUNDING DATES:

STUDY OBJECTIVES: Brief review of: 1) physical factors relating to flooding; 2) social factors affecting flooding; 3) flooding damage.

PROJECT

NAME & LOCATION Channelization and other minor flood control measures (curbs, storm drains, etc.) in and around Salt Lake City with specific regard to flooding of the Jordan River.

DESCRIPTION: Area prone to flooding. Mountains and desert quite close. Snow melt floods less prominent than cloudburst floods.

PURPOSES: Flood control.

PROJECT PHASE DISCUSSED: Pre-Construction

METHODOLOGY

GENERAL: Brief Review of Research

TECHNIQUES AND DATA USED: Secondary sources.

IMPACTS DISCUSSED

A) Social conflict over aesthetics.

B)

C)

D)

E)

IMPACT A: Social conflict over aesthetics.

GROUPS IMPACTED: Streamside residents

PROJECT PHASE: Pre-Construction

INDICATORS: Testimony at Corps Hearings

EXTENT OF IMPACT: People downstream defeat Corps proposal to cement line or otherwise alter the channels of streams to handle flood waters from built up areas above them.

CAUSE AND PROCESS: People opposing are motivated by the feeling that they (lower stream residents) should not suffer the negative aesthetic effects of channelization because of a flood problem caused unnecessarily by the actions of others living upstream.

LINK TO OTHER IMPACTS:

IMPACT B:

GROUPS IMPACTED:

PROJECT PHASE:

INDICATORS:

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 6

NTIS#

STUDY

TITLE: Social Dimensions of Urban Flood Control Decisions

AUTHORS: Andrews, Wade, and Geersten, Dennis

INSTITUTION: Institute for Social Science Research on Natural Resources, Utah State University

BACKGROUND: Sociologists

PUBLICATION DATE: January 1974

OTHER REPORTS:

FUNDING GROUP: DOI/OWRR

FUNDING LEVEL:

FUNDING DATES:

STUDY OBJECTIVES: Exploratory study of social variables most important to making public decisions about controlling flood waters of streams: a) describe important institutions; b) describe behavior of people regarding flood control decisions. Objectives: a) Determine social factors affecting flood control decisions; b) Discover and measure attitudes (institutional) affecting decision-making.

PROJECT

NAME & LOCATION

DESCRIPTION: Variety of flood control proposals: 1) Master storm drain system; 2) Jordon River dredging and channeling--in downtown Salt Lake City; 3) Jordon River parkways--channel enlargement, desilting or catch basins, and recreational parks; 4) Retention Parks--Most of time parks when needed flood basins; 4) Channeling streams leaping into Jordon River from east.

Steep Terrain=Several creeks descending rapidly from Wasatch mountain range into heavily settled Salt Lake City area. Urbanization spreading along creeks into the moutains. Altering drainage patterns.

PURPOSES: Flood control and in some cases recreation.

PROJECT PHASE DISCUSSED: Pre-Construction

METHODOLOGY

GENERAL: Sampling, survey, statistical analysis deals primarily with the social aspects of flood control. A limited/exploratory study. Eventually develop a model of flood behavior motivation.

TECHNIQUES AND DATA USED: Samples: 1) Streamside residents n=80; 2) Residents of flood prone areas not immediately adjacent to streams n=19. Categories: Flood experience and hazard perception, awareness and communication indexes related to flooding, levels of concern, attitudes toward proposed projects, general political, social, recreation patterns, measures of aesthetic leisure, and environmental, and political factors. Statistics-CHI square test for independence and significance .05 level acceptable.

IMPACTS DISCUSSED

A) Differing institutional responses to public pressure.

B) Low awareness of pertinent government agencies.

C) Differing levels of awareness of specific plans and their implications.

D) Low level of political activity.

E)

IMPACT A: Differing institutional responses to public pressure.

GROUPS IMPACTED: Local Government, Army Corps of Engineers, local residents

PROJECT PHASE: Pre-Construction

INDICATORS: Secondary sources

EXTENT OF IMPACT: First county flood control department tentatively approved stream lining (actually built in one area). Citizens group upstream, anticipating work in their area, petitioned against it--brought a reversal of official county attitude. County flood control director said he supported multiple use retention basins. The Corps had been the advocate the channelization because it was more efficient. After county builds a retention basin, Corps gives up advocacy of channelization.

CAUSE AND PROCESS: Differing response is the result of the fact that the local government more sensitive to local public expression and pressure than "the more insulated and remote federal agency." Corps fails to recognize that technical efficiency and economic merit are not the most important issues.

LINK TO OTHER IMPACTS:

IMPACT B: Low awareness of pertinent government agencies.

GROUPS IMPACTED: Local residents, local, state, and federal agencies

PROJECT PHASE: Pre-Construction

INDICATORS: Responses to questions in survey identify any government agencies whose main purpose in Salt Lake City is flood control. Awareness existed if flood control department or Corps was mentioned.

EXTENT OF IMPACT: Only 1/3 people were aware of one or more flood control agencies while 2/3 were aware of flood control problems. Streamside (43%) more aware than flood prone (30.3%) residents.

CAUSE AND PROCESS: Streamside more aware because of recent stream channeling debate. [Many view Corps in a national perspective rather than a local one.]

LINK TO OTHER IMPACTS: Different levels of awareness of specific plans and implications

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IMPACT C: Different levels of awareness of specific plans and implications.

GROUPS IMPACTED: Local residents

PROJECT PHASE: Pre-Construction

INDICATORS: Responses to survey questions. Read a list of plans and asked: 1) if they'd heard of it; and 2) how it would control flooding.

EXTENT OF IMPACT: Most who know of projects know some specifics. Streamside residents more aware of plans and their relative desirability than flood damage residents. Parkway plan is least visible as a flood control measure. Dredging and channeling of Jordan River is most visible: people who had lived streamside longer than 6 years much more aware of flood control projects.

CAUSE AND PROCESS: Debate over channelization more directly affects streamside residents therefore they are more interested in finding the more desirable flood control measures. Jordon River Parkway was publicized mainly as recreation; its flood control function, because of its complexity, was downplayed. Long term residents who have most awareness are homeowners directly affected by alterations in flood control measures.

LINK TO OTHER IMPACTS:

IMPACT D: Low level of public activity.

GROUPS IMPACTED: Local residents, streamside and flood damage

PROJECT PHASE: Pre-Construction

INDICATORS: Responses to survey questions on behavior related to flood control proposals

EXTENT OF IMPACT: Only 1/20 of streamside flood damage residents have actively promoted proposals since 1965. Only one flood damage resident has actively opposed; 1/3 of streamside residents have actively opposed projects. All opposition was centered around stream channelization.

CAUSE AND PROCESS: Opposition caused by aesthetic; ecological, financial and safety concerns. People also feel plans are not effective in controlling floods. Because floods are really rather rare, few people actively promote the project.

LINK TO OTHER IMPACTS: Linked to Impacts A & C

IMPACT E:

GROUPS IMPACTED:

PROJECT PHASE:

SOCIAL IMPACTS OF WATER RESOURCES DEVELOPMENTS:
STUDY SUMMARY

ID# 7

NTIS#

STUDY

TITLE: "Social Effects of Changes in The Uses of Bear Lake, An Interstate Body of Water"

AUTHORS: Andrews, Wade H. and Dunaway, William C.

INSTITUTION: Institute for Social Science Research and Natural Resources
Utah State University. Logan, Utah

BACKGROUND:

PUBLICATION DATE: 11/1/75

OTHER REPORTS:

FUNDING GROUP: DOI/OWRT (in part)

FUNDING LEVEL:

FUNDING DATES:

STUDY OBJECTIVES: Examine competing and conflicting uses of water and examine social effects of change in use of water. Water use and institutional structures and Policies.

1) Conceptual approach to conflict of use
2) Describe conflicts in water use in Bear valley
3) Analyze institutional constraints & conflicts
4) Recommend Policies

PROJECT

NAME & LOCATION: Bear Lake - in Northern Utah and Southern Idaho, Heart of Bear River Basin - Almost a natural resevoir.

DESCRIPTION: Large Body of fresh water. 100 sq. miles of water located on a major tourist route - Salt Lake to Yellowstone & Grand Teton. Undergoing early stages of recreational development

PURPOSES: Multi-Purpose - Recreation, irrigation and power generation

PROJECT PHASE DISCUSSED: USE/ Post Construction

IMPACTS

Hypothesis advanced/Models/Application of sociological conflict and ecological field survey: stratified sampling of property theory owners (Location/Predominant Residence)

TECHNIQUES AND DATA USED: Interviews with local elected and appointed officials (28) mailed questionnaire (Preceded by Telephone call) to 120 randomly selected property owners.
Secondary data sources - commission meetings town council meetings, academic studies, newspaper accounts
stratification - location of residence/permanency of residence age, sex, education, occupation

SPECIFIC IMPACTS DISCUSSED:

A) Community Power structure elaboration

B) Conflict between new and older interest groups

C) Decrease in Agricultural Land

D) Creation of Bear Lake Regional Commission

E) Decrease in number of farmers

IMPACT A: Community Power Structure Elaboration

GROUPS IMPACTED: Several towns in the Bear Lake region.

PROJECT PHASE: Post construction/use

INDICATORS:

EXTENT OF IMPACT: More interest in seeking advice from outside groups to help deal with previously unencountered problems.

CAUSE AND PROCESS: Rapid social change due to change in land and water resource use is the source of the new problems.

LINK TO OTHER IMPACTS: Related to all other impacts.

IMPACT B: Conflict between new and old interest groups

GROUPS IMPACTED: Recreational interests and downstream agriculturalists and power company

PROJECT PHASE: Post-Construction

INDICATORS: Differences on taxes and pollution

EXTENT OF IMPACT: Much of farming land previously untaxed now being taxed as recreation property, forcing many farmers and ranchers to sell out. Others can't expand their operations. Recreationists are concerned about animal waste pollution of lake.

CAUSE: Rapid influx of recreation users with different priorities.

LINK TO OTHER IMPACTS:

IMPACT C: Decrease in Agricultural Property (52)

GROUPS IMPACTED: Farmers

PROJECT PHASE: Post-Construction

INDICATORS: Number of farm tracts

EXTENT OF IMPACT: Not given

CAUSE AND PROCESS: Property taxes because of reclassification as recreational property. Farmers can't pay taxes and have to sell. Also those farmers who stay either cut back to smaller lots or cannot expand.

LINK TO OTHER IMPACTS: Cause of Impact A.

IMPACT D: Creation of a Bear Lake Regional Commission

GROUPS IMPACTED: Entire region

PROJECT PHASE: Post-Construction

INDICATORS: Secondary accounts - informal Congressional hearings. Interviews with officials and property owners.

EXTENT OF IMPACT: Commission is well thought of in the area. Many officials feel it is the most appropriate means for handling the problems of the interstate body of water.

CAUSE AND PROCESS: Feeling of social and environmental problems not solved by existing institutions creates Commission. High regard for Commission is the result of its close contact with local town and county officials on zoning, water, and sewage problems.

LINK TO OTHER IMPACTS: Related to Impacts A, B, C, and E

IMPACT E: Decreasing number of farmers

GROUPS IMPACTED: Farmers

PROJECT PHASE: Post-Construction

INDICATORS: Number of farm tracts

EXTENT OF IMPACT: Farmers selling land. Extent of selling not given.

CAUSE AND PROCESS: Property taxes caused by reclassification as recreational property. Land formerly untaxed.

LINK TO OTHER IMPACTS: Cause of Impact A, directly related to Impact C.

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 8

NTIS#

STUDY

TITLE: Social Impacts of Water Resource Developments and their Implications for Urban and Rural Development: A post-audit analysis of the Weber Basin Project in Utah.

AUTHORS: Andrews, Wade; Madsen, Gary; Legaz, Gregor J.

INSTITUTION: Institute for Social Science Research on Natural Resources, Utah State University

BACKGROUND: Sociologists

PUBLICATION DATE: December 1974

OTHER REPORTS:

FUNDING GROUP: DOI/OWRT (in part)

FUNDING LEVEL:

FUNDING DATES:

STUDY OBJECTIVES: 1) Explore and describe social conditions where a major reclamation water development project was built; 2) Analyze correspondence between present condition and original goals; where have goals been surpassed? 3) Explore methods of evaluating social and aesthetic (non-economic) value.

PROJECT

NAME & LOCATION: Weber Basin project (Bureau of Reclamation) Northern Utah, adjacent to the Great Salt Lake. Highly urban area of study. Construction: 1952-1966, 5 reservoirs (62,215,8,23 & 51 thousand acre feet) + 1 dam enlargement, 2 power plants, 4 canals, and 2 aqueducts (one-21.6mi).

DESCRIPTION:

PURPOSES: Multi-purpose: Municipal water use, hydroelectric recreation, some fish and wildlife protection, irrigation.

PROJECT PHASE DISCUSSED: Post-Construction

METHODOLOGY

GENERAL: Two elements involved--physical and social. Social is divided into two elements--humanistic and economic interests. Humanistic interests include welfare, aesthetic, and diversion/entertainment interest. Post audit methodology focusing on analysis of humanistic interests.

TECHNIQUES AND DATA USED: Two types of data--secondary and survey. Officials and farm and non-farm publics: a) secondary data--get at goals and impacts using Bu: Rec reports, Census reports, Basin Water conservancy reports, and recreation data from a variety of sources; b) Official interviewed with a standard open ended questionnaire. Farm and non-farm populations also interviewed in open ended/ exploratory manner.

IMPACTS DISCUSSED

A) Reduction of economic anxiety

B) Beauty of area enhanced

C) Administrative problems develop

D) Limited law enforcement difficulties

E)

IMPACT A: Reduction of economic anxiety.

GROUPS IMPACTED:	Municipal, industrial and agricultural user of Weber Basin Water.
PROJECT PHASE:	Post-Construction
INDICATORS:	Responses to questions by farmers on benefits of the projects. Ranking of advantages by municipal officials. Ranking of project advantages by irrigation company officials.
EXTENT OF IMPACT:	General feeling that Weber project has stimulated growth of the area through reducing anxiety about water supply. It is the advantage cited most often by municipal officials and second most often by irrigation company officials.
CAUSE AND PROCESS:	An assured dependable water supply for the Basin area is primarily responsible for reduction of anxiety.
LINK TO OTHER IMPACTS:	

IMPACT B: Beauty of the area enhanced.

GROUPS IMPACTED:	Residents of Weber Basin
PROJECT PHASE:	Post-Construction
INDICATORS:	Responses of farm and non-farm population to questions on recreation and irrigation. Also ranking of benefits by municipal and irrigation county officials.

EXTENT OF IMPACT: Aesthetic value of the reservoirs of the project is rated very high in recreational enjoyment of the project. In discussion on non-agricultural irrigation impacts, gardening improvement is frequently mentioned.

CAUSE AND PROCESS: Reservoirs as scenic attractions and assured water supply for gardening are major causes of this impact.

LINK TO OTHER IMPACTS:

IMPACT C: Administrative problems develop.

GROUPS IMPACTED: Local municipalities, Basin authorities and state agencies concerned with Weber Basin Project.

PROJECT PHASE: Post-Construction

INDICATORS: Interviews with officials and rankings of disadvantages by municipal and irrigation officials.

EXTENT OF IMPACT: 1) Agricultural -- Problem arises with the ease of transition of land from farming to residential subdivision. Law has not kept pace with the ease and irrigation is still required where it is not needed. Owners have to pay for irrigation even though they don't use.

2) Recreation management and administration was for a long time not assumed by any one agency. Bureau of Reclamation had no authority over recreation. Because of a lack of unified administration of project, recreation management faltered.

CAUSE AND PROCESS: Lack of administrative planning concerning possible future problems created by this project is the cause.

LINK TO OTHER IMPACTS:

IMPACT D: Limited Law Enforcement Difficulties.

GROUPS IMPACTED: Residents of Weber Basin especially in urban areas.

PROJECT PHASE: Post-Construction

INDICATORS: Interviews with residents

EXTENT OF IMPACT: Problems primarily at Pineview, the oldest and most urban of the reservoirs (close to Ogden). High degree of vandalism as inner city youths congregate on beaches in large numbers.

CAUSE AND PROCESS: Forest service people not experienced dealing with urban youth more oriented toward rural problems.

LINK TO OTHER IMPACTS:

IMPACT E:

GROUPS IMPACTED:

PROJECT PHASE:

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 9

NTIS# PB-249-499

STUDY

TITLE: Community Values and Collective Action in Reservoir Development.

AUTHORS: Bultena, Gordon L. (P.I.)

INSTITUTION: Iowa State Water Resources Research Institute, Iowa State University

BACKGROUND:

PUBLICATION DATE: September 1975

OTHER REPORTS:

FUNDING GROUP: 1) DOI/OWRR under PL 88-379 (matching grant)
2) Iowa Agriculture and Home Economics experiment Station
3) Graduate College of Iowa State

FUNDING LEVEL:

FUNDING DATES: 6/71 - 6/75

STUDY OBJECTIVES:
1) Determine level and character of public knowledge about proposed reservoir projects.
2) Determine public attitudes toward proposed reservoir projects.
3) Ascertain social benefits and costs as perceived by those whose communities would be impacted.
4) Examine level of recreational use of proposed reservoir sites.
5) Examine interaction of Army Corps and citizens in areas of proposed reservoir.
6) Examine citizen actions taken to influence public policy.

PROJECT

NAME & LOCATION: Ames Reservoir - Proposed reservoir on Skunk River near Ames, Iowa-Central Iowa (30 mi. no. of Des Moines).

DESCRIPTION: Jefferson Reservoir - Proposed reservoir on Racoon River near Jefferson Iowa - 50 mi. due west of Ames.
Saylorville Reservoir - Near Ledges State Park - 1/2 way between Ames and Des Moines.

At the time of the study Ames and Saylorville had been authorized by Congress. Jefferson had only been proposed (by the Corps). In each case there was environmentalist/agriculturalist opposition to the reservoir.

PURPOSES: Ames - 1) Flood control; 2) Water quality; 3) Recreation.
Saylorville - 1) Flood control; 2) Recreation.
Jefferson - 1) Flood control; 2) Water quality, 3) Recreation.

PROJECT PHASE DISCUSSED: Pre-Construction

METHODOLOGY

GENERAL: Survey Research

TECHNIQUES AND DATA USED: Interviews with people in surrounding counties--Ames (390), Jefferson (267+55 with Activist Group Opposed [supporting group refused to make membership list available] in-depth interviews with individuals prominent in the reservoir issue) Saylorville - (191 interviews in Des Moines).

Mailed Questionnaire - Saylorville - (1,000 sent - 419 returned). Respondents had higher than base population.

IMPACTS DISCUSSED:

A) Lack of knowledge about proposed reservoirs

B) Opposition to projects

C) Opposition to the Army Corps of Engineers

D)

E)

IMPACT A: Lack of knowledge about proposed reservoirs.

GROUPS IMPACTED:	Population of the surrounding counties (2-3 counties per reservoir).
PROJECT PHASE:	Pre-Construction
INDICATORS:	Responses to questionnaires and interviews
EXTENT OF IMPACT:	Ames (2/5 unaware, 2/5 do not follow it closely) [Issue had been around for over 30 years]. Jefferson [81% aware, less than 1/3 knew proposing group, 3% knew justifications, 60% knew major source of opposition]. Saylorville [97% knew of dam, 80% aware of possible flooding of ledges, less than 2/3 knew of adverse impacts from flooding.
CAUSE AND PROCESS:	a) Inadequate and Biased distribution of information about the projects by public agencies. Costs severely discounted. b) Interest differs with age, SES, environmental interests, and standing (non-beneficiary) with regard to project.
LINK TO OTHER IMPACTS:	Interest in specific issues was very important to knowledge about reservoirs and impacts.

IMPACT B: Opposition to proposed projects.

GROUPS IMPACTED:	People in region, resource agency involved, local governments
PROJECT PHASE:	Pre-Construction
INDICATORS:	Responses to questionnaires, interview data, review of public hearings transcripts.

EXTENT OF IMPACT: Ames-30% oppose, 25% promote. Opposition stronger than support.
Jefferson-40% oppose, 22% support. Opposition stronger than support.
Saylorville-50% costs/benefits, 23% benefits/costs, only 8% feel project should be terminated.
People in Des Moines favor (47%-11%) Saylorville Reservoir
All groups feel existing reservoirs (3) are desirable and should have been built.

CAUSE AND PROCESS:

1) Flooding, recreation, and water quality were identified as major problems by only a few people; even when seen as a major problem, solutions favored are alternatives to a reservoir.
2) Generally agreed that the reservoir would flood too much good farm land, benefit too few people, and destroy some wildlife habitat.

LINK TO OTHER IMPACTS:

IMPACT C: Opposition to the Army Corps of Engineers

GROUPS IMPACTED: Corps personnel, Project supporters

PROJECT PHASE: Pre-Construction

INDICATORS: Attitudes to statements about The Corps

EXTENT OF IMPACT: Most favorable on opportunities for recreation and economic growth brought by Corps (67-9/43-18)
Least favorable--Corps efforts to involve local citizens in project planning and decision-making
Jefferson-48% felt Corps wasted taxpayers money.

CAUSE AND PROCESS:

LINK TO OTHER IMPACTS: Attitudes toward Army Corps projects strongly associated with feelings about the desirability of Ames and Jefferson reservoirs.

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 10

NTIS# PB-226-815

STUDY

TITLE: Social Costs and Benefits of Water Resource Construction

AUTHORS: Burdge, Rabel J., Johnson, K. Sue

INSTITUTION: University of Kentucky Water Resources Research Institute

BACKGROUND: Sociology

PUBLICATION DATE: November 1973

OTHER REPORTS:

FUNDING GROUP:

FUNDING LEVEL:

FUNDING DATES: 4/1/72-6/30/73

STUDY OBJECTIVES: Develop a composite picture of the migration process using data from families and individuals forced to move due to reservoir construction. Identify the social economic and material benefits and costs associated with forced relocation. Describe the role of the relocating agency. Particular attention is paid to those who found the process psychologically and economically costly.

PROJECT

NAME & LOCATION: Reservoirs in Kentucky and Ohio in different phases:

DESCRIPTION: Taylorsville Reservoir - Central Kentucky 25 S.E. of Louisville, not yet started construction.
Caesars Creek Reservoir - S.E. Ohio - Presently filling.
Paintsville Reservoir - Johnson County in Eastern Kentucky. On the Paint Creek Branch of the Leuisa Fork River (Proposed)
Carr Fork Reservoir near Hindman in Knot County - Eastern Kentucky - In Construction.
Cave Run Reservoir - Nibata and Rowan Counties - Eastern Kentucky - nearing completion. Primary emphasis on Carr Fork - The most thorough relocation case.

PURPOSES:

PROJECT PHASE DISCUSSED: Pre-Construction, Construction, Post-Construction
Primarily Post-Construction (Carr Fork)

METHODOLOGY

GENERAL: Develop generalizations about personal life changes and attitudes resulting from water resource projects. Survey attitudes of individuals forced to relocate longitudinal emphasis.

TECHNIQUES AND DATA USED: Questionnaires and personal interviews. Carr Fork - Corps records provide the universe-questionnaire developed on characteristics, attitudes towards reservoir and agencies involved with it, pre-location situation and post-location situation - some open ended questions. Pre-tested on sample of forced migrants in low income coal regions in eastern Kentucky.

IMPACTS DISCUSSED

A) Growing opposition/polarization as construction nears

B) Financial situation worsened

C) Social patterns changed

D)

E)

IMPACT A: Growing Opposition/Polarization as construction approaches.

GROUPS IMPACTED:	People who will have to relocate as a result of reservoir construction
PROJECT PHASE:	Pre-Construction
INDICATORS:	Responses of people at Paintsville & Carr Fork reservoir sites
EXTENT OF IMPACT:	1970 study found people in vicinity of Paintsville Reservoir very acquiescent to the reservoir. Opposition increased as construction approached - Spring 1973 95% signed an anti-dam petition.
CAUSE AND PROCESS:	Respondents cited: 1) Inadequate information given previously; 2) Corps' desire for too much buffer land; 3) Benefits accruing to others. Many moved are older, with fixed incomes and very established patterns of activity oriented around their homes - loss of home is irreparable.
LINK TO OTHER IMPACTS:	

IMPACT B: Personal financial situation worsened by construction

GROUPS IMPACTED:	People relocated as a result of dam construction
PROJECT PHASE:	Post-Construction
INDICATORS:	Responses of Carr Fork forced migrants to questions on financial situation, indebtedness, and their reaction to the move caused by the reservoir.

EXTENT OF IMPACT: Of those who said their financial situation worsened, 58% attributed it to the move. Of those who said their situation improved, 21% said it was the result of the dam. Indebtedness is more unusual in the cash economy of eastern Kentucky than in middle class suburbs. Of the 30% whose indebtedness had increased, 73% said it was the result of the dam.

CAUSE AND PROCESS: Dam relocation hits people differentially, those who are older with fixed incomes and were landowners were the ones hurt most

LINK TO OTHER IMPACTS: Some people hurt most opposed dam in Impact A

IMPACT C: Social Patterns Changed

GROUPS IMPACTED: Those forced to relocate because of dam construction.

PROJECT PHASE: Post-Construction

INDICATORS: Responses to closed and open ended questions on changes in social patterns

EXTENT OF IMPACT: Visiting: 60% say they visit less with friends. Family activities: 38% less likely to engage in family activities (Picnics, drives, shopping, etc.) 55% say change has been worse overall.

CAUSE AND PROCESS: Complaints probably true of anyone who had recently moved. But these people, rural-traditional backgrounds, are not accustomed to the idea of moving. It disrupts their lives more than it would a middle class suburban family.

LINK TO OTHER IMPACTS:

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 11

NTIS#

STUDY

TITLE: Reservoir Impact Study

AUTHORS: Cook, Earl (PI), Ruth Schaeffer (Social Impact), James Stribling (Recreation), Duane Baumann, Nancy Simkowski

INSTITUTION: College of Geologic Sciences, Texas A&M (Through Texas Water Resource Institute)

BACKGROUND: Geography, Geosciences, Sociology

PUBLICATION DATE: November 1974

OTHER REPORTS:

FUNDING GROUP: DOI/OWRR

FUNDING LEVEL:

FUNDING DATES:

STUDY OBJECTIVES: Reservoir impact or hindsight study. Comparison of what was expected to result with what actually occurred. Actually a series of 9 studies on hydrologic, economic, sociological aspects.

PROJECT

NAME & LOCATION: Canyon Dam on the Guadalupe River in Comal County Texas (Near San Antonio). Impounds a body of water known as Canyon Lake, built 1958-1964. Surface area 8,300 acres. Total construction cost - $20,795,000. The only large impoundment in the Guadalupe Basin. Above New Braunfels, between Austin and San Antonio: 150 miles.

DESCRIPTION: Inland from the Gulf of Mexico. The area is primarily horticultural (cotton, corn, oats, sorghum) and ranching within an area of projected urban growth. (Shaeffer) 22 U.S. Army Corps Dams throughout Texas. All constructed after World War II, most after 1960. Costs ranging from 2 million to 20 million.

PURPOSES: Canyon-Power Development, Flood Control, Groundwater Recharge, Water Conservation, Soil Conservation.

PROJECT PHASE DISCUSSED: Post-Construction

METHODOLOGY

GENERAL: General method--Separate studies on hydrology, economic impact, sociological aspects, ecological impact, and floodplain insurance. Sociological (Schaeffer): a) select dam community (82 selected); b) identify knowledgeable people; c) mailed questionnaire to selected knowledgeable people; d) In-depth interviews 40 people questioned in Canyon Dam area.

TECHNIQUES AND DATA USED: Schaeffer: a) mentioned in Corps reports, proximity to Dam responses of community leaders, review by dam resident manager; b) letters to bank presidents, Chamber of Commerce, Lions, Kiwanis and board of revieweds, asking who is knowledgeable. Youth groups and soil conservation directors added, snowball question in questionnaire; c) 9 page 3 part questionnaire (780 sent). Part I - Background on reaction to construction; Part II - Present attitudes towards dam's impact, Part III - Personal profile. 415 responses in 4 month period; d) using questionnaire select key influential people in 5 areas (8 dams), 85 interviews conducted areas mixed some urban, some rural, one mixed (canyon).

IMPACTS DISCUSSED

A) Favorable reactions to the dam by local residents (Schaeffer)

B) Add to economic growth (Schaeffer)

C) Increase community safety (Schaeffer)

D) Increase general social wellbeing (Cook)

E)

IMPACT A: Favorable reaction to the dam by local residents

GROUPS IMPACTED: Local residents near 22 dams

PROJECT PHASE: Pre-Construction and Construction

INDICATORS: Responses to questions on questionnaire.

EXTENT OF IMPACT: 77% favorable - dams built after 1950 - people more favorable (80) than 1944-1948 Period (60%) General shift 32% from unfavorable to favorable over the years of supported rather than opposed construction. 90% say people in the community supported rather than opposed construction [90% felt hopes realized after dam's construction]. Canyon 69% of 40 respondents living in area when dam proposed, 95% say expectations of those favorable to the dam were met.

CAUSE AND PROCESS: Support for dam construction based on water supply, recreation and flood prevention (40%), area development (4.5%), irrigation (9%). Opposition comes from use of good roads, lumber and land support opposition primarily from groups outside impact area.

LINK TO OTHER IMPACTS:

IMPACT B: Add to economic growth of the community

GROUPS IMPACTED: Local residents split (50-40) over whether one group benefited more than another. 1) Landowners (according to 14.5%); 2) Business Services (according to 13.2%); 3) Combination (according to 10.9%).

PROJECT PHASE: Post-Construction

INDICATORS: Responses to questionnaire of 390 respondents

EXTENT OF IMPACT: Canyon = 92.5% felt dam added to growth - 50% general, 20% recreation, 12% commercial, 5% safety from flooding. General - 35% - general growth, 18% growth related to water supply.

CAUSE AND PROCESS: 15% say recreation and industry, 10% commercial and populations and growth 84.2% - Land values changed; high degree of local use of reservoir. Canyon = early emphasis on navigation and power indicate relief that cheap freight and electricity will attract industry and industrialization would increase economic growth. (Cook Section) Cook qualifies impact-says interstate highways more important than dam.

LINK TO OTHER IMPACTS:

IMPACT C: *Increase in community safety*

GROUPS IMPACTED: Residents of areas surrounding dams

PROJECT PHASE: Post-Construction

INDICATORS: Responses to Questionnaire

EXTENT OF IMPACT: All of Texas - 229 leaders (55.2%) say they had serious flooding problems before dam. 269 respondents (64.8%) said dam had increased safety, 22% said no. 26.5% say dam has eradicated danger, 36.2% say dam has decreased danger, 23.4% say dam has had no effect at all.

CAUSE AND PROCESS: Canyon=92% say threat serious, 67% say dam means safety, 25% say no (cite the 1972 flash flood). 50% say damage to new Braunfels would have been higher if dam had not been there.

LINK TO OTHER IMPACTS:

IMPACT D: Increase General Social Wellbeing

GROUPS IMPACTED: Residents of area near Canyon Dam and people of San Antonio. Specifically:
1) Those who use Canyon and Guadalupe for recreation
2) Those who occupy down stream property
3) Those who benefit from controlled flow of Guadalupe - municipalities that use the water, industrial plants that use it, farms using it for irrigation, landowners, large operators on Guadalupe.

PROJECT PHASE: Post-Construction

INDICATORS: [None cited] "Difficult to Quantify"

EXTENT OF IMPACT: Canyon Dam clearly contributes to social well being - Contribution secondary to dam's primary impact - Economic health of the flood plain. Economic health allows for recreation and buying vacation homes on the lake.

CAUSE AND PROCESS: Reducing damage to flood plain, providing recreational opportunities.

LINK TO OTHER IMPACTS:

IMPACT E:

GROUPS IMPACTED:

PROJECT PHASE:

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 12

NTIS# PB-227-482

STUDY

TITLE: Human Factors involved in the development of a watershed in Yabucoa

AUTHORS: Del Rio, Ferdinand; Collazo, Jenaro; Berrios, Angel; Garcia, Nicholas

INSTITUTION: Water Resources Research Institute. School of Engineering, University of Puerto Rico.

BACKGROUND: Del Rio - Agriculture, Collazo - Sociology and Anthropology, Berrios - Soil Conservation, Garcia - Agricultural Extension

PUBLICATION DATE: July 1970

OTHER REPORTS:

FUNDING GROUP: DOI/OWRR in part

FUNDING LEVEL:

FUNDING DATES:

STUDY OBJECTIVES:
1) Determine personal characteristics of the people of the area;
2) Characterize the community in terms of solidarity, cohesion, mobility, attitude towards present and future;
3) Ascertain attitudes, knowledge and opinion towards watershed project;
4) Determine farming situation;
5) Help program developing in watershed.

PROJECT

NAME & LOCATION: Guayanes River Watershed Project, Flood Water Retarding structures, Land treatment practices, sediment pool - Watershed is 14 mi. long 3-6 mi. wide. (49.53 sq. mil). total cost $4 million.

DESCRIPTION: S.E. Puerto Rico - Entirely within the municipality of Yabucoa. Heavily agricultural.

PURPOSES: Protect area from heavy floods

PROJECT PHASE DISCUSSED: Pre-Construction

METHODOLOGY

GENERAL: Survey - Belief in importance of attitudes

TECHNIQUES AND DATA USED: Secondary sources and personal observation

IMPACTS DISCUSSED

A) High degree of awareness - low level of activity

B) Differing levels of accuracy in perception of projects main purpose

C) High degree of approval for project

D) Little disagreement over distribution of benefits

E)

IMPACT A: High degree of awareness - low level of activity

GROUPS IMPACTED:	Resident of Yabucoa
PROJECT PHASE:	Pre-Construction
INDICATORS:	Answers to Questions: Heard of the project? Attend meetings?
EXTENT OF IMPACT:	97% of lowland and highland residents had heard of the project. 70% had not attended any meetings. 14.2% attended one. Attendance higher among lowlanders. Most people who attended acted only as spectators.
CAUSE AND PROCESS:	Most people learned of the project through personal contacts - 53% from an officer, 33% from a neighbor. Lowlanders in greater attendance because the meetings were closer to them and they were more directly affected by floods.
LINK TO OTHER IMPACTS:	

IMPACT B: Differing levels of accuracy in perception of purpose of project

GROUPS IMPACTED:	Residents of watershed
PROJECT PHASE:	Pre-Construction
INDICATORS:	Response to question on main purpose. Protection from floods is correct answer.

EXTENT OF IMPACT: In general almost 60% did not know the main purpose. 82.7% of lowlanders knew the correct answer. 33.9% of highlanders were correct.

CAUSE AND PROCESS: Lowlanders most directly affected by floods so they are more likely to know the purpose of the project

LINK TO OTHER IMPACTS: Awareness (Impact A) does not necessarily mean accurate perception (Impact B)

IMPACT C: High degree of approval for project

GROUPS IMPACTED: Residents of watershed

PROJECT PHASE: Pre-Construction

INDICATORS: Opinions on project - bad, fair, good, excellent

EXTENT OF IMPACT: 80% feel project is worthwhile. Highlanders feel it is good (74%), lowlanders feel it is good (48%), or excellent (24%).

CAUSE AND PROCESS: These favorable responses are the result of a good education program and a well defined problem.

LINK TO OTHER IMPACTS:

IMPACT D: Little disagreement over distribution of benefits

GROUPS IMPACTED: Residents of watershed

PROJECT PHASE: Pre-Construction

INDICATORS: Responses to: Who will benefit more, highland or lowland? Are highlanders (lowlanders) concerned about your problems? Can you contribute to solving problems of highland (lowland)?

EXTENT OF IMPACT: Highland and lowland similar perception or distribution of benefits 35% (H&L), say everybody. 28% (l) and 40% (H) say lowlands will benefit.

CAUSE AND PROCESS: 86% (H) and 93% (L) feel a strong communal feeling towards opposite numbers. But in both cases about 40% of people felt opposite numbers were not at all that concerned with their problems.

LINK TO OTHER IMPACTS: Both high and lowlanders feel they can contribute to the solution of both areas problems (70%).

IMPACT E:

GROUPS IMPACTED:

PROJECT PHASE:

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 13

NTIS# PB-224-982

STUDY

TITLE: Impact of a Proposed Reservoir on,Local Land Values: Anthropological Analysis of Social and Cultural Benefits and Costs from Stream Control Measures: Phase 3

AUTHORS: Drucker, Phillip; Smith, Charles; Turner, Allen

INSTITUTION: University of Kentucky Water Resources Institute

BACKGROUND: Anthropologists

PUBLICATION DATE: July 1972

OTHER REPORTS: Phases 1&2 - Baseline data. Phases 4&5 reported in other study reviews

FUNDING GROUP: DOI/OWRR (In part)

FUNDING LEVEL:

FUNDING DATES: 7/1/70 - 6/30/71

STUDY OBJECTIVES: Define the impact of new patterns of land buying related to reservoir proposal. Part of a larger study on impacts of proposed dam construction.

PROJECT

NAME & LOCATION: 3000 acre multi-purpose reservoir proposed on Salt River near Taylorsville, Kentucky in Spencer County (adjacent to Jefferson County where Louisville is located) Northwestern Kentucky. 25 mi. S.E. of Louisville, 60 mi. west of Lexington, estimated cost (1969) $24 - 40 million.

DESCRIPTION: Taylorsville-small (950) people rural agriculturally based. Tobacco and dairy farming the major types of farming. Social organization quite tight based on families, kin, family churches, and neighbor cooperation. Land important as source of status, place (home), neighborliness, income, and old age security.

PURPOSES: Flood Control and Recreation

PROJECT PHASE DISCUSSED: Pre-Construction 1962-1970.

METHODOLOGY

GENERAL: Anthropology - Cognitive anthropology - Assess perceptions of local residents of subculture and values relative to the land and determine impacts of proposed construction of this subculture and values. A holistic approach.

TECHNIQUES AND DATA USED: Anthropological interviewing and participant observation. Investigators reside and/or visit area often. Using a pre-memorized schedule of questions, interviews take place in a face-to-face situation. (Believed to reduce spurious answers given on mailed questionnaires.) One-on-one discussions and discussions in town meeting places - church, fields, general store. Use photographs to elicit comments indicative of culturally conditioned attitudes. Review land sales 1962-1970 using county records (last open market sales prior to Corps buying).

IMPACTS DISCUSSED:

A) Change perceptions of land value

B) Raise fear of out-migration

C) Raise fears of in-migration and transients

D) Create anxiety and disorganization of social structure

E)

IMPACT A: Change perceptions of land-value

GROUPS IMPACTED: Buyers and sellers of property in Spencer County, 1964-1970

PROJECT PHASE: Pre-Construction

INDICATORS: Land sales prices, buyers and sellers, comments by people in the area.

EXTENT OF IMPACT:
1) Above dam site the fact that 1/2 buyers have no interest in agriculture suggests speculative buying relevant to the dam. Sellers give it up cheap feeling agricultural utility affected by dam proposal;
2) Below the dam land values increase with anticipation of reduced risk from flood. Land value increases as dam probability increases.
3) [indirect] Move toward more commuting to Louisville from Spencer County, spurred by media emphasis on recreational potential of Taylorsville Dam, causes more land to be sold in residential areas near main road to Louisville

CAUSE AND PROCESS:

CAUSES:
1) Dam proposal
2) Speculation
3) Media emphasis on recreation

LINK TO OTHER IMPACTS:

IMPACT B: Raise fears of out-migration

GROUPS IMPACTED: Opponents of dam in Taylorsville

PROJECT PHASE: Pre-Construction

INDICATORS: Comments by people interviewed

EXTENT OF IMPACT: Several of the complaints about the reservoir focus on types of people attracted to the area by the dam. Fear of effect of large number of recreation users on town. Also of the types of industries that would move in to serve them. Fear of becoming a "slum." Also fear of increasing tendency to move away from traditional rural community to a more suburban community. Believe these forces will push towards the county going "wet."

CAUSE AND PROCESS: These fears are spurred by the buying of a few tracts of land by Louisville doctors and lawyers (action small, impact great).

LINK TO OTHER IMPACTS: Related changed in value of land (Impact A)

IMPACT C: Fear of out-migration

GROUPS IMPACTED: Residents of Taylorsville who oppose the dam.

PROJECT PHASE: Pre-Construction

INDICATORS: Comments to researchers

EXTENT OF IMPACT: Fear a breakup of traditional social and familiar relations because of relocation. Feel there is not enough land for relocating people. Also with rising land prices it will be difficult to find land of comparable value.

CAUSE AND PROCESS: Anticipation of out-migration of people who live in area to be inundated because of their inability to find suitable land at a fair price in the area.

LINK TO OTHER IMPACTS: Caused by Impact A

IMPACT D: Increase anxiety and social disorganization within community

GROUPS IMPACTED: Taylorsville community

PROJECT PHASE: Pre-Construction

INDICATORS: Comments of people interviewed discussions of conflicts over dam, changes in behavior patterns

EXTENT OF IMPACT:
1) Anti-dam petition creates conflict within families and social groups in Taylorsville. Few of these conflicts are better and widely known.
2) Some opponents no longer patronize Taylorsville merchants.
3) People to be dislocated unable to make plans - must wait to see what they will get for their land.

CAUSE AND PROCESS: This disorganization is caused by:
1) Polarized attitudes on the dam - "Progress" vs. maintaining the integrity of the community.
2) Belief that Taylorsville merchants and Louisville people behind the dam to further their self-interest
3) Large number of *rumors* generated about Corps procedure, difficulty in estimating what the Corps will consider "fair market value."

LINK TO OTHER IMPACTS:
Opposition derived from Impacts B and C which are caused in some degree by Impact A

IMPACT E:

GROUPS IMPACTED:

PROJECT PHASE:

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 14

NTIS# PB-227-968

STUDY

TITLE: Socio-Cultural Impact of Reservoirs on Local Government Institutions: Anthropological Analysis of Social and Cultural Benefits and Costs from Stream Control Measures - Phase 4.

AUTHORS: Drucker, Phillip; Clark, Jerry; Smith, Dianne

INSTITUTION: University of Kentucky Water Resources Research Institute

BACKGROUND:

PUBLICATION DATE: October 1973

OTHER REPORTS: Phases 3&5 and Smith's School District Paper are reviewed elsewhere.

FUNDING GROUP: DOI/OWRR (In part)

FUNDING LEVEL:

FUNDING DATES: 7/1/71 - 6/30/72

STUDY OBJECTIVES: Analyze the impact of reservoir formation on local government. Emphasis on perceptions of impact and actual impacts. Impact of a proposed and two completed reservoirs analyzed. Translate results into practical aids to decision-making. Examine local government functions. Reservoir impact on those functions, people's adaptation to perceived problems.

PROJECT

NAME & LOCATION

DESCRIPTION: Three reservoirs - 2 completed, 1 proposed:
a) Taylorsville Reservoir - proposed - In Spencer County, North Central Kentucky, 25 mi. S.E. of Louisville, 3000 acre multi-purpose reservoir in a rural/agricultural area;
b) Green River Lake - completed - Taylor County - 90 mi. S.E. of Louisville at confluence of Green River and Robinson Creek - Summer Pool of 8200 acres and construction completed 6/69, cost $32.4 million - Study area - Adair and Taylor Counties, both highly agricultural. Taylor has more manufacturing. Adair median income - 4,500 Taylor median family income - 6500 Barren River Lake - completed - Barren and Allen Counties South Central

(see page 2)

Kentucky, 10,000 acres, 940 sq. mi. drainage area - completed 1964 cost $28 million. Tobacco and dairying major crops - both counties primarily agricultural. Barren is more industrialized than Allen.

PURPOSES:

All three multi-purpose. Flood Control, Recreation, Water Supply

PROJECT PHASE DISCUSSED: Pre- and Post-Construction

METHODOLOGY

GENERAL: Anthropological - Compare impacts in three areas of similar type using cultural perspective. Impacts on social institutions. Use anthropological concepts and field methods.

TECHNIQUES AND DATA USED: Participant observer (Taylorsville) brief open ended questionnaire not intended for generation of quantifiable data.

IMPACTS DISCUSSED

A) Unfounded fears of loss of tax revenue resulting from reservoir

B) Increased burden on local roads

C) Greater burden on law enforcement agencies

D)

E)

IMPACT A: Unfounded fears of a loss of tax revenue as a result of the reservoir

GROUPS IMPACTED: Residents of Taylorsville, residents near Barren River and Green Reservoirs

PROJECT PHASE: Pre-Construction and Post-Construction

INDICATORS: Responses to questions of participant observers; patterns of revenue in counties, comments by county officials and residents

EXTENT OF IMPACT: Near Taylorsville opinion widely held that the reservoir will significantly decrease tax base by taking away taxable property county revenues mostly from real estate taxes. In counties surrounding other recently completed reservoirs. County financial position was not affected by the construction of a reservoir.

CAUSE AND PROCESS: Taylorsville residents only looking at one factor. In other counties, trend towards higher land values and new construction compensate for loss of reservoir land.

LINK TO OTHER IMPACTS:

IMPACT B: Increase burden on local roads

GROUPS IMPACTED: People living near the two completed reservoirs

PROJECT PHASE: Post-Construction

INDICATORS: Comments by county officials and businessmen

EXTENT OF IMPACT: Primary impact is increased traffic resulting from tourists attracted to the reservoir. Most people perceive greatest local need is good roads. [Taylorsville people do not anticipate the traffic problem, more concerned with increasing maintenance costs].

CAUSE AND PROCESS: Influx of recreation users strain local roads. State Highway Departments fail to adjust to problems created by reservoir. County maintenance inefficiency exacerbates the problem.

LINK TO OTHER IMPACTS:

IMPACT C: Greater burden on law enforcement agencies

GROUPS IMPACTED: People living near two completed reservoirs

PROJECT PHASE: *Post-Construction*

INDICATORS: Comments by county officials, law enforcement officials, and private citizens

EXTENT OF IMPACT: Almost all agree law enforcement problems have increased markedly since reservoir construction. [Problems not great during construction as is anticipated by the Taylorsville residents.]

CAUSE AND PROCESS: Influx of recreation users: Most of the burden are minor traffic, boating, and littering violations. Number of violations more than local agencies can handle.

LINK TO OTHER IMPACTS: Both impacts B&C caused by influx of recreation users.

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 15

NTIS# PB-238-627

STUDY

TITLE: Displacement of Persons by Major Public Works: Anthropological Analysis of Social and Cultural Benefits and Costs from Stream Control Measures - Phase 5.

AUTHORS: Drucker, Phillip (P.I.); Smith, Charles; Reeves, Edward.

INSTITUTION: University of Kentucky Water Resource Research Institute

BACKGROUND: Anthropologists

PUBLICATION DATE: December 1974

OTHER REPORTS: Phases 3&$ and Smith's work on education reported in other reviews

FUNDING GROUP: DOI/OWRR (In part)

FUNDING LEVEL:

FUNDING DATES: 7/1/72 - 6/30/73

STUDY OBJECTIVES: Test the utility of anthropological method and concept in evaluating and explicating socio-cultural impact. Check hypothesis concerning importance of impact on socio-economic culture of people displaced.

PROJECT

NAME & LOCATION

DESCRIPTION: Two reservoirs in Kentucky:
a) Taylorsville Reservoir - Spencer County, Kentucky
2.5 mi. S.E. of Louisville - N. Central Kentucky. Proposed 3,000 acre pool - area predominantly rural/agricultural.
b) Green River Reservoir - Taylor and Adair Counties Kentucky
S. Central Kentucky. More industrial area than Spencer County.

PURPOSES: Taylorsville - Flood Control, Water Quality, Recreation, Fish and Wildlife Enhancement

PROJECT PHASE DISCUSSED:

METHODOLOGY

GENERAL: Ethnographic field methods to test hypothesis that man induced environmental change creates socio-cultural change. Comparison of two similar areas in terms of impact. One prior to displacement, another post-displacement.

TECHNIQUES AND DATA USED: Participant observer, in-depth field interviews (open-ended). Use of key informants.

IMPACTS DISCUSSED:

A) Intra-community animosities develop.

B) Social disorganization is not perceived as significant as economic changes

C)

D)

E)

IMPACT A: Intra-community animosities develop

GROUPS IMPACTED:	Residents of communities near and in dam site - Taylorsville and Green River
PROJECT PHASE:	Pre-Construction
INDICATORS:	Comments by people in the area, petitions, and letters
EXTENT OF IMPACT:	Communities near Taylorsville and Green River Reservoir polarized around the dam issue. One person says he found out who his true friends were. Many found it difficult to remain neutral.
CAUSE AND PROCESS:	Those being dislocated see their trouble benefiting other more than themselves. Townspeople and downstream farmers see the opposition as standing in the way of progress
LINK TO OTHER IMPACTS:	Fears are not borne out in Impact B.

IMPACT B: Social disorganization is not perceived as important as economic changes

GROUPS IMPACTED:	Those dislocated by the Green River Reservoir and those to be dislocated by Taylorsville
PROJECT PHASE:	Pre- and Post-Construction
INDICATORS:	Comments on effects of dam on economic and social position

EXTENT OF IMPACT: Social disorganization is worrisome but pales in insignificance when compared to the perception of possible economic disaster to be caused by the dam.

CAUSE AND PROCESS:
1) Lack of social disorganization importance. Most people stay within the county and identify strongly with county as a social unit. In Taylorsville, of 22 households, 16 were or wanted to stay in the county. In Green River area, 151 of 166 households located within 20 miles of original homes sites;
2) Many dislocated at Taylorsville feel they won't be able to relocate with anywhere near the same accommodations.

LINK TO OTHER IMPACTS: Green River people resented the threat to their economic security and the bad way in which the process of acquisition was handled. Not as much concern with their resultant economic situations.

IMPACT C:

GROUPS IMPACTED:

PROJECT PHASE:

INDICATORS:

EXTENT OF IMPACT:

CAUSE AND PROCESS:

LINK TO OTHER IMPACTS:

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 16

NTIS# PB-234-543

STUDY

TITLE: Fidelity of Information Transmissjon in Local Campaigns on Water Issues

AUTHORS: Fliegel, Frederick C.; Kivlin, Joseph E.

INSTITUTION: Water Resources Center, University of Illinois

BACKGROUND: Agricultural Economics, Sociology

PUBLICATION DATE: April 1974

OTHER REPORTS:

FUNDING GROUP: DOI/OWRR

FUNDING LEVEL:

FUNDING DATES:

STUDY OBJECTIVES: Examine the process through which information about water issues is disseminated to and within a local community and identify factors creating distortion. Specifically: a) to what extent relevant audience even minimally exposed; b) which sources most influential; c) what meanings were assigned to which issues; d) determine extent directly vs. indirect relates to distortion of information. Focus on multi-step communication.

PROJECT

NAME & LOCATION Expansion of a sewage treatment facility in Momence, Illinois. 1970 - Acute water pollution problem resulting from local industry expansion.

DESCRIPTION: Momence - (2,626) outsdie Kankakee in Northern Illinois near Chicago, but primarily a rural trading center and light manufacturing area.

PURPOSES: Pollution Control

PROJECT PHASE DISCUSSED: Pre-Construction

METHODOLOGY

GENERAL: Looking at two alternative research hypothesis:
a) Loss of information leading to faulty perceptions: the further one gets from the "objective" source;
b) Network effect levels one information discrepancies meaning distance from source does not affect perceptual accuracy. Use a site specific case study.

TECHNIQUES AND DATA USED: Questionnaire -(Self-administered) given to a stratified sample of Momence residents:
a) Every 4th head of household from a list of water subscribers n=213
b) Community leaders, mayor, bank presidents, editors, etc. n=22
c) High school seniors, n=78 (interviews 1 month apart). Questions on personal characteristics, local pollution issues, information about pollution issues, attitudes toward solution to pollution problem in general, perception of position in relation to solution.

IMPACTS DISCUSSED:

A) Though the problem is acute, concern fails to crystalize.

B)

C)

D)

E)

IMPACT A: Though problem is acute, concern fails to crystalize

GROUPS IMPACTED:	Residents of Momence
PROJECT PHASE:	Pre-Construction
INDICATORS:	Responses to questions on focus of pollution, benefits town receives from industry, and how to solve the problem.
EXTENT OF IMPACT:	Consensus (80%) that pork plant is the major source of pollution, but no consensus on solution. 42% would close plant, 58% would allow levels of pollution to continue.
CAUSE AND PROCESS:	Those involved in political process less inclined to support a measure that would entail high cost to the community. Hurting industry would increase unemployment. Opposition to pollution primarily "Grass Roots" - people who discuss problem with family and friends more likely to be anti-pollution. 1/2 of people who discuss would close down the plant, 1/3 of people who don't discuss would close it.
LINK TO OTHER IMPACTS:	

IMPACT B:

GROUPS IMPACTED:	
PROJECT PHASE:	
INDICATORS:	

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 17

NTIS# PB-219-585

STUDY

TITLE: Local Economic Impact of Reservoir Recreation

AUTHORS: Garrison, Charles B.

INSTITUTION: Center for Business and Economic Research, Water Resources Research Center, University of Tennessee

BACKGROUND: Economics

PUBLICATION DATE: July 1972

OTHER REPORTS:

FUNDING GROUP: DOI/OWRR (In part)

FUNDING LEVEL:

FUNDING DATES: 7/1/70 - 6/30/72

STUDY OBJECTIVES:
1) Estimate the local economic impact of recreation activities at Norris Lake. Focus on Primary Impact - Payroll and Employment of enterprises flowing directly to recreation users and secondary-multiplier effects of respending incomes generated by recreation;
2) Compare recreation based impacts with impacts of water based industry.

PROJECT

NAME & LOCATION: Norris Lake - Eastern Tennessee - Formed in 1936 by the Norris Dam. With its 800 mile shoreline. It is the largest and most popular of the TVA reservoirs, visitation exceeded 2 million annually throughout the 1960's.

DESCRIPTION: Now Johnsonville industrial plants engaged in manufacture of titanium dioxide and aluminum. Also a TVA steam plant. Norris Lake is in a three county area (Campbell, Claiborne, Union) which is primarily rural - one urban place (LaFollette) - Per capita income 1/2 state average manufacturing increasing in importance.

PURPOSES:

PROJECT PHASE DISCUSSED: Post-Construction

METHODOLOGY

GENERAL: Estimate Primary Impacts
Estimate secondary impacts using economic base theory (multiplier effects) and separating out effects of recreation from effects of other major developments.

TECHNIQUES AND DATA USED:

1) Survey by TVA in 1963 and 1964 of recreation users on their patterns of expenditures;
2) Estimates by TVA of total annual visitation;
3) County personal income estimates - Dept. of Commerce, *Office of Business Economics*;
4) Employment estimates - Bureau of Census - 1963 and 1907 census of business

IMPACTS DISCUSSED:

A) Contribution of recreation to local economy relatively *unimportant*

B) Impact of water-based industry on the local economy much greater than the impact of recreation

C)

D)

E)

IMPACT A: Contribution of recreation to the local economy is relatively unimportant

GROUPS IMPACTED: Residents of three county area surrounding Norris Lake

PROJECT PHASE: Post-Construction

INDICATORS: Visitor expenditures, personal income estimates, employment figures.

EXTENT OF IMPACT: Norris Lake is very popular but compared to other forces it is unimportant to the economy. $7.4 million, recreation $634,000. Manufacturing created 1,068 jobs (926 primary, 142 secondary) Recreation - 46. Transfer payments and agriculture were even more important than manufacturing to the local economy.

CAUSE AND PROCESS:

LINK TO OTHER IMPACTS:

IMPACT B: Impact of water based industry on local economy greater than impact of recreation

GROUPS IMPACTED: Residents of Humphreys and Benton Counties in Tennessee

PROJECT PHASE: Post-Construction

INDICATORS: Personal income estimates, employment figures, comparison of impacts

EXTENT OF IMPACT: Water based industry has significantly altered economy of new Johnsonville population increased 16% total personal income grew 78%; Norris Lake area experienced population decrease and became more dependent on unearned income (transfer payments).

CAUSE AND PROCESS:

LINK TO OTHER IMPACTS:

IMPACT C:

GROUPS IMPACTED:

PROJECT PHASE:

INDICATORS:

EXTENT OF IMPACT:

CAUSE AND PROCESS:

LINK TO OTHER IMPACTS:

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 18

NTIS# PB-238-634

STUDY

TITLE: An Analysis of the Social Wellbeing Change Associated with Resource Development Projects in Wyoming

AUTHORS: Hackbart, Merlin; Long, Gary; York, Mike

INSTITUTION: Water Resources Institute, University of Wyoming, Laramie

BACKGROUND:

PUBLICATION DATE: June 1973

OTHER REPORTS:

FUNDING GROUP: DOI/OWRR (In part)

FUNDING LEVEL:

FUNDING DATES:

STUDY OBJECTIVES: 1) Evaluate social well-being potential objective of resource development projects;
2) Evaluate social well-being change associated with resource developments in Wyoming.

PROJECT

NAME & LOCATION: Not one specific project. Looking at counties in Wyoming with and without federally-funded water resource development projects. Specifically - Dams, canals, and irrigation projects.

DESCRIPTION: Four Wyoming River Basins:
1) Platte
2) Belle Fourche
3) Big Horn
4) Green

PURPOSES: Irrigation, power, flood control, navigation, recreation

PROJECT PHASE DISCUSSED: Post-Construction

METHODOLOGY

GENERAL: Social well-being can't be measured directly-necessary to use "Proxies" - benefits accruing to resource projects (indices are measures of proxies which indicate social well-being). Criticizes W.R.C. task force well-being proxies; very interested in operational proxies of social well-being. Emphasis on welfare economics. Particularly aware of the problems of assigning value to changes because of different perceptions of utility. Proxies used in study:

1) Increased real income or changing income distribution (No evaluation as to a gain or loss in well-being)
2) Population dispersal and rural urban balance (No evaluation of contribution to well being
3) Improvement of conditions contributing to economic stability
4) Provision of educational and recreational opportunities.

TECHNIQUES AND DATA USED: Data obtained from census of population, census of agriculture, B. Rec. statistical appendices, the office of business economics, and the Wyoming employment security commission. Compared data from project counties against data from non-project counties. Analyzed variance to establish significance for certain indices. Comparisons made among counties in a river basin and among all counties.

IMPACTS DISCUSSED:

A) Altered distribution of income

B) Increased economic diversity - economic stability

C)

D)

E)

IMPACT A: Altered the distribution in income

GROUPS IMPACTED: Residents of Project Counties

PROJECT PHASE: Post-Construction

INDICATORS: Percent of households over the poverty line using $2,363 (1950) and $2,999 (1960)

EXTENT OF IMPACT: All counties decreased # of households below poverty line between 1950 and 1960, more of a decline however in resource counties (statistically significant).

CAUSE AND PROCESS: Existence of water resource projects

LINK TO OTHER IMPACTS:

IMPACT B: Increased Economic Diversity

GROUPS IMPACTED: Residents of Wyoming

PROJECT PHASE: Post-Construction

INDICATORS: Diversification of distribution of employment over all categories. Use employment changes by sector to measure change, entropy measure used. Entropy near 0 means little diversification, near 1 greater diversification.

EXTENT OF IMPACT: All entropy measures for 1940, 1950, and 1960
1) Within every county employment patterns diversified, same is true of each river basin;
2) Variation among counties in diversification diminished 1940-1960;
3) No recognized pattern regarding impact of resource projects. Might conclude "Resource projects have a positive influence on diversification but that a lag is involved in achieving greater diversification through resource development (54) Project counties slightly more than the state as a whole.

CAUSE AND PROCESS:

LINK TO OTHER IMPACTS:

IMPACT C:

GROUPS IMPACTED:

PROJECT PHASE:

INDICATORS:

EXTENT OF IMPACT:

CAUSE AND PROCESS:

LINK TO OTHER IMPACTS:

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 19

NTIS# PB 214 480

STUDY

TITLE: The Impact of a Major New Reservoir upon Recreation Behavior

AUTHORS: Hecock,Richard and Rooney, John I.

INSTITUTION: Department of Geography Oklahoma State University, Oklahoma
Water Resources Research Institute

BACKGROUND: Geographers

PUBLICATION DATE: December 1972

OTHER REPORTS:

FUNDING GROUP: In Part - DOI/OWRR [Water Resources Act 1964]

FUNDING LEVEL:

FUNDING DATES:

STUDY OBJECTIVES: Look at neglected area-impact of public development investments on recreation behavior. Help solve problems with assessment of recreation benefits.

PROJECT

NAME & LOCATION: Keystone Resevoir (with 1950, Const. begining 1952, pool begins filling 1962, now [1972] complete)

DESCRIPTION: N.E. Quadrant of Oklahoma 10 mi. west, Tulsa, 80 miles N.E. of Oklahoma City
26,300 acres water surface (5th. largest in state) 330 mile shoreline
[Picnic grounds 16 boat launches, areas, 9]

PURPOSES: Recreation. 4th most popular [visitation days] reservoir in Oklahoma. Most visitors from Tulsa.

PROJECT PHASE DISCUSSED: Post Construction/use

METHODOLOGY

GENERAL: Field research

TECHNIQUES AND DATA USED: Interviews - Sampling
Sampling done using geography-divide town into quadrants *interview 6 within* each quadrant + area adjacent to central business district. For Oklahoma City & Tulsa, Quadrants are subdivided. Questions: Frequently of participating, most visited site, favorite area for recreation activities [also age, occupation, euipment]

IMPACTS DISCUSSED

A) Recreational participation affected

B) Loss of hunting and fishing streams

C)

D)

E)

IMPACT A: Recreational Participation affected.

GROUPS IMPACTED: Inhabitants of surrounding region negligible beyond 60 miles/ most within 30 mile radius. Strongest to the North and West where there are no comparable resevoirs.

PROJECT PHASE: Post Construction/use

INDICATORS: Recreation behavior, equipment ownership, participation days.

EXTENT OF IMPACT: Only slight effect, no change in equipment ownerhsip.
Several types of changes possible:
1) Change location of recreation, no increase in participation
2) Decrease participation
3) Change location and increase participation
4) Initiate participation

This case mostly #1, some #2

CAUSE AND PROCESS: Existence of a new resevoir

LINK TO OTHER IMPACTS:

IMPACT B: Loss of Hunting and Fishing Streams

GROUPS IMPACTED: Small fraction of recreationists

PROJECT PHASE: Post Construction

INDICATORS: Responses to Questionnaire

EXTENT OF IMPACT: Of those interviewed, 14% report a decrease in water-based recreation. Keystone had a modest impact on that decrease - primarily in the decrease of hunting and fishing opportunities.

CAUSE AND PROCESS: The decrease in opportunities results from the innundation of streams and land used for hunting and fishing.

LINK TO OTHER IMPACTS:

IMPACT C:

GROUPS IMPACTED:

PROJECT PHASE:

INDICATORS:

EXTENT OF IMPACT:

CAUSE AND PROCESS:

LINK TO OTHER IMPACTS:

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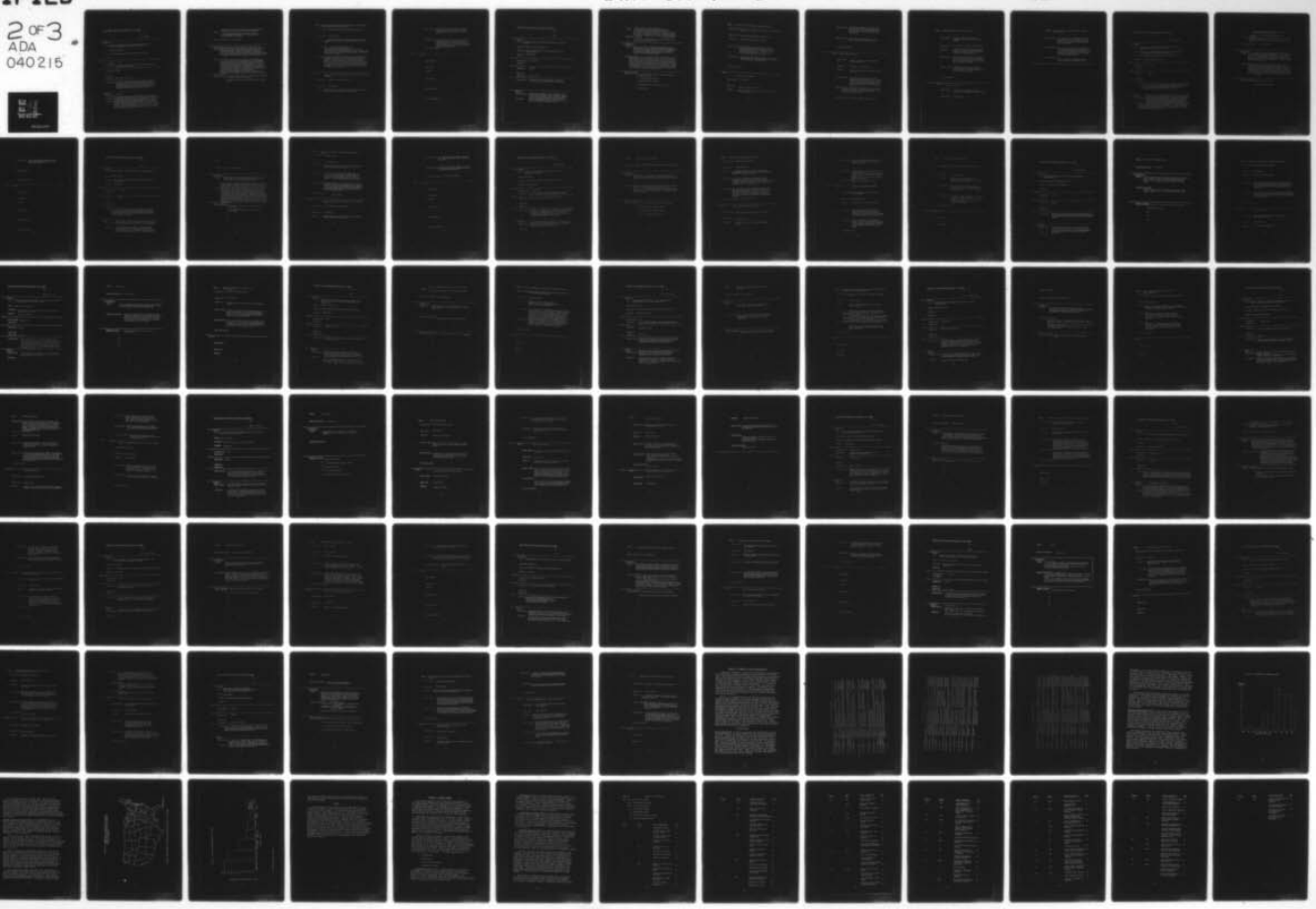

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 20

NTIS# PB 244-536

STUDY

TITLE: The Effect of Landowner Attitude on The Financial and the Economic Costs of Acquiring Land For a Large Public Works Project

AUTHORS: Higgins, John Malvern Jr.

INSTITUTION: Kentucky Water Resources Institute University of Kentucky

BACKGROUND:

PUBLICATION DATE: 1967

OTHER REPORTS: Part of The Economic Impact of Flood Control Resevoirs Project. Project Director Dr. LD. James.

FUNDING GROUP: DOI/OWRR

FUNDING LEVEL:

FUNDING DATES: 1965- (1970's year project)

STUDY OBJECTIVES: Examines financial and economic costs incurred in acquiring right of way for three Corps resevoirs and relates these costs to attitude characteristics of land owners and local publics. Consider extra-economic value placed on land by landowners and local publics guide the planner in estimating special personal "Sentimental" [Private] values placed on real estate

PROJECT

NAME & LOCATION: 3 Resevoirs

DESCRIPTION: 1) Rough River Reservoir-Central Kentucky, 60 mi. South West of Louisville; between Grayson & Breckenridge Counties. Drainage area - 454 sq. miles; surface area 10,260 sq. miles constructed 1955-59 cost 10 million. area-agricultural (Hay, Corn, Tobacco) 2) Dewey Reservoir- Eastern Kentucky, Midway between Ohio and Tenn. borders. on John's creek in Floyd and Pike counties. Drainage area 207 sq. miles, surface area 3, 125 acres. Poor area, subsistence farming, low grade timer, crops-Corn, hay, and vegetables. Dam started 1946. 3) West fork of Mill Creek Reservoir- Hamilton County in Southwest Ohio 10 mi. north of Cincinnati.

PURPOSES: Drainage area, 29.5 sq. miles, surface area - 557 acres constructed 1949-1952, cost 3 million, encircled by suburban development

1) a) Reduce Flood Damages (Ohio River Basin) b) recreation
2) a) Flood Control b) recreation c) low flow augmentation
3) a) Flood Control b) recreation

PROJECT PHASE DISCUSSED: Pre-construction

METHODOLOGY

GENERAL: Qualitatively enumerate costs and factors affecting attitudes. Quantitative Analysis - Collect data on gen'l method: costs, attitudes, and factors affecting attitudes look for correlations among costs (Financial and economic. Looking at attitudes of landowners and local public; reactions affect a projects implementation. Test Hypothesis- The extent, the cost deviates from cost under normal conditions depends on attitudes. Develop theory of correlation of cost and attutude - test.

TECHNIQUES AND DATA USED: Data collected from Corps offices in Huntington, W. Va. and Louisville Kentucky, county courthouses near projects, Landowners selling and local citizens. A questionnaire [Based on 30 are design interviews] focusing on reaction to project, estimates of impacts, recollection of selling of property or 850 property owenrs in 3 reservoir areas, 350 sent questionnaires, 100 responded/ Post card questionnaire on reservoir benefits sent to people in local areas selected from voter registration lists - 2 groups 1) In the Flood Plain, 2) On both sides of the Project (Up & Downstream). 450 sent 80 returned. Attempt using regression analysis to predict which factors best predict attitudes [an aggregate measure based on responses to selected questions]

IMPACTS DISCUSSED

A) The more a project affects the local land owners, The greater the reaction - both positive and negative

B) The more knowledge held about the project the more favorable attitude

C)

D)

E)

IMPACT A: The more a project affects the local Landowners, the greater the effect (positve and negative) towards the project.

GROUPS IMPACTED: Landowners whose land is taken for Dam and local public.

PROJECT PHASE: Pre-Construction

INDICATORS: Responses to questions on questionnaires and post cards. An aggregate of several questions to determine attitude, and data on land.

EXTENT OF IMPACT: Dewey residents consistently oppose dam and say they originally opposed it, while Rough River Residents overwhelmingly favor their dam. Local Publics: Local public at Dewey more favorable to dam than local public at Rough River. Difference here not as great as between Dewey and Rough River Landowners.

CAUSE AND PROCESS: Owners of property at Dewey Reservoir most affected by Dam affected by dam construction [most land lost, most cemeteries lost, homes lost] People had owned property longer-greater sentimental attachment. Comparable land, less available in surrounding area. This is partly the result of necessity & partly the result of policy of buying the entire valley rather than only the tracts needed. The local public was benefited more by the reservoir than other resevoirs studied→lake is in a remote area where recreation of those would be a big addition to local economy.

IMPACT B:

Greater knowledge about project leads to more favorable attitudes by landowners.

GROUPS IMPACTED: Landowners and Construction Agency

PROJECT PHASE: Pre-Construction

INDICATORS: General attitude scale based on a weighted aggregate of responses to selected questions and responses to other questions

EXTENT OF IMPACT: According to the "F-Level" [variance ratio] the owners knowledge about the project is a much more significant explainer of the variance of the owners attitude.

CAUSE AND PROCESS: Somewhat the effect of the study design - knowledge about project measured by description of what he knew about the project, which could have been influenced by other factors. Also, little knowledge about downstream benefits makes the necessity of giving up personal property even harder.

LINK TO OTHER IMPACTS:

IMPACT C:

GROUPS IMPACTED:

PROJECT PHASE:

INDICATORS:

EXTENT OF IMPACT:

CAUSE AND PROCESS:

LINK TO OTHER IMPACTS:

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 21

NTIS#

STUDY

TITLE: Socio-Cultural Impacts of Water Resource Development in the Santiam River Basin

AUTHORS: Hogg, Thomas C. and Smith, Courtland L.

INSTITUTION: Water Resources Research Institute, Oregon State University. Corvallis, Oregon

BACKGROUND: Anthropologists

PUBLICATION DATE: October 1970

OTHER REPORTS:

FUNDING GROUP: DOI/OWRR

FUNDING LEVEL:

FUNDING DATES: 7/1/68 - 6/30/70

STUDY OBJECTIVES: Assess the impacts of the construction of two dams on the behavioral and attitudinal patterns of Santiam Basin

PROJECT

NAME & LOCATION

DESCRIPTION: Two dams, Foster and Green Peter, on the middle and south Santiam River in Northwestern Oregon. Santiam is a tributary to the Willamette river Basin. Focus on adjacent communities of Foster and Sweet Home Oregon. Green Peter Dam is above the Foster Dam on the South Santiam. Heavily forested foothills and mountains. Rural, soil not particularly rich, hay, grain, some fruits and vegetables grown

PURPOSES: Santiam is flash near Foster Dams built for:
1) Flood control 2) irrigation 3) Downstream navigation
4) On site power 5) Down-stream power 6) recreation
Dams planned in the 1930's, authorized 1938. Construction begins 1961. Foster (the regulator) - 4,565 ft. long and 126 ft. high. Storage area - 61,000 acre feet - 2 turbines - total capacity 20K-KW
Green Peter - 1500/& long & 360 ft. high storage - 430,000 ft.
2 turbines - 80 K KW

PROJECT PHASE DISCUSSED: Pre-construction, construction, post-construction. [Dams 3 years into operation when research ended.]

METHODOLOGY

GENERAL: Historical perspective - standard research methods with special anthropological techniques. Guided by a social systems model showing different stages, between water resources and cultural dimensions of technology- Human organization and changes in attitudes about water specifically, examine integrative actions of residents in response to massive technological change.

TECHNIQUES AND DATA USED: Historical baseline data on Sweet Home and Foster- from the perspective of cultural adaptation. Sweet Home - Early agricultural - WW II - Lumber boom by 1950 population begins to dwindle. Survey of sweet Home residents, interviews, detailed observations, interviews - community leaders and people in every day walks of life. General questionnaire on benefits of reservoir with main empasis on social organizations and religion also touched on problems of the resevoir and recreation behavior. Sample based on households. Life histories collected on influential and representative people. Team as participant observers, customers. Sampled questionnaire of downstream electrical recreation survey.

IMPACTS DISCUSSED

A) Increased legalism and formalism in community government leading to conflict

B) Purchase of recreation equipment

C) Changing town social structure

D) Rapid growth and decline of community services

E) New town image

IMPACT A: Increased legalism and formalism in community government.

GROUPS IMPACTED: People in service industry and their clients, total population of the area

PROJECT PHASE: Pre-construction, construction, post-construction

INDICATORS: Observations of behavior, crime statistics

EXTENT OF IMPACT: Formalizing formerly informal procedures, establishing structures where none had existed, increased need for paperwork and official reports. Increase in the prestige of local government functions. Particularly in law enforcement city manager and chief of police conflict over the personalized style of the police.

CAUSE AND PROCESS: New people with new requirements disagree with old fashioned style of government. Influx of workers puts a strain on the 'personal' style of the government.

LINK TO OTHER IMPACTS:

IMPACT B:

Purchase of recreation equipment

GROUPS IMPACTED: Local merchants

PROJECT PHASE: Construction and post construction

INDICATORS: Number of recreation vehicles owned; $/year spent of water recreation equipment

EXTENT OF IMPACT: Greater than money brought into region by recreationists in other ways. 25% of Sweet Home Residents own boats. Before Dam very few owned boats. Recreation supplies did the best business in construction phase.

CAUSE AND PROCESS: Dam recreation increases interest in recreation leading to more recreation equipment buying.

LINK TO OTHER IMPACTS:

IMPACT C: Changing town social structure.

GROUPS IMPACTED: Residents of Sweet Home, especially residents prior to construction

PROJECT PHASE: Construction - Post Construction

INDICATORS: Behavior at traditional events, increased legalism and formalism

EXTENT OF IMPACT: Change from the articulation (specificity and interdependence) based on logging to more separation of functions, to an articulation based on a new concept of community based urban-suburban values. Chamber of Commerce Dinner, formerly the scene of practical jokes, now a well-run, formal coat and tie affair.

CAUSE AND PROCESS: Construction of the dam upset traditional logging based community integration. Now with return to logging, integration has changed to more urban-suburban context. Urban-suburban migrants key to the shift.

LINK TO OTHER IMPACTS: A general statement of impacts A,D, & E.

IMPACT D: Rapid growth and decline in community services.

GROUPS IMPACTED: Residents of Sweet Home, especially post-construction students. Employees of the city taxpayers.

PROJECT PHASE: Pre-construction, construction, post-construction

INDICATORS: Student-teacher ratio, dollars spent per student, revenue sources, municipal expenses per capita, revenues all compared with pattern of total man hours worked in constructing the dam.

EXTENT OF IMPACT: Expansion and decline of school system. General rise in municipal service levels. Expansion of water system to accommodate influx of construction workers. End result - improved per capita service with increased per capita taxes.

CAUSE AND PROCESS: Improvements in municipal services spurred by anticipated influx of construction workers. After the workers left taxpayers left with better services but greater tax burden.

LINK TO OTHER IMPACTS:

IMPACT E:

Change in town's image

GROUPS IMPACTED: Old residents, new immigrants to the town. (2nd) people of Portland and Salem (target of Image)

PROJECT PHASE: Post-Construction

INDICATORS: New zoning ordinance, improved main street, condemning decaying buildings.

EXTENT OF IMPACT: Originally regarded as dirty-logging town. People seeing recreational value of dams want to change the image to a neat, clean, and orderly town. This desire to project the image stimulated the development of the environment.

CAUSE AND PROCESS: Influx of urban and suburban oriented people with the expansion of services. This and the possibility of increasing realty values due to dam-related recreation. New residents become influential members (city manager, newspaper editor, supt. of schools, President of Chamber of Commerce)

LINK TO OTHER IMPACTS:

Change in image → Greater willingness to spend money on good schools and adequate services.

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 22

NTIS# PB 231-485

STUDY

TITLE: Techniques for Identifying and Evaluating Market and Non-Market Benefits and Costs of Water Resource Systems

AUTHORS: Social aspects - Holloway, Milton (Project Director), [Wade, Andrews, & Stanley Albrecht - consultants] Randall Kamerbeek

INSTITUTION: Systems Engineering Division, Texas Water Development Board

BACKGROUND: Economics, operations Research

PUBLICATION DATE: June 1973

OTHER REPORTS:

FUNDING GROUP: DOI/OWRR

FUNDING LEVEL:

FUNDING DATES:

STUDY OBJECTIVES: 1) Provide a set of techniques for measuring market and non-market benefits & costs of water resource systems. Develop techniques & test them for economic, environmental, and social impacts specifically interested in computer oriented analytical techniques

PROJECT NAME & LOCATION: 3 Reservoir Projects in North Central Texas 1) Belton Lake near Waco in Central Texas, 2) Lake Wintney-SW of Fort Worth, 3) Lake Lewisville - North of Dallas in North Central Texas.

DESCRIPTION: 1) Belton Dam on Leon River in Brazos River Basin completed 4/54 drainage area of 3,560 miles, surface area 7,400 acres in a rural area, primarily dryland crops, 2) Whitney Dam on Brazos River completed 12/51. Drainage area - 26,120 sq. miles, surface area 15,760 acres. Rural, agricultural area - located on border of two counties, Hill and Bosque. 3) Lewisville Dam on the Elm Fork of the Trinity River (w/in 35 mi. of Dallas). It was a replacement for Lake Dallas which it inundated. City of Dallas major beneficiary. Surface area 66,100 acres, drainage area 1,660 sq. mi.

Agriculture and some industries related to Fort-Worth Dallas trade source of area income.

PURPOSES: 1) Belton Water used mainly for municipal purposes, no irrigation
2) Whitney water used for agricultural and municipal uses - Power, Recreation, Flood Control
3) Lewisville Dam - Flood Control, Conservation Storage, and recreation

PROJECT PHASE DISCUSSED: Post-Construction

METHODOLOGY

GENERAL: 1) Formulation of proposed techniques; 2) Testing techniques descriptive powers; 3) Refinement of techniques; 4) Test on constructed projects. Uses conceptual model linking economic, environmental, & social systems allow comparison of economic, environmental and social trade-offs associated with water resource policies - The EES model. Work on social impacts as labelled experimental. Interested in quantitative, descriptive measures.

TECHNIQUES AND DATA USED: Economic simulation, eco-system simulation, social indicators - social nobility, health & illness, public order & safety, stability, democratic process, access to public services. Measurements of real and perceived values. Emphasis, in social impacts on local impacts survey of a random sample of residents of the five counties surrounding the 3 resevoirs - designed to provide information on attitudes about social indicators (education, health, stability, etc.) Lack of secondary data→use measures of perceived impact from the survey data.

IMPACTS DISCUSSED

A) Enhance the beauty of the area

B) Increase in job opportunities

C)

D)

E)

IMPACT A: Enhanced the beauty of the area

GROUPS IMPACTED: Residents of area

PROJECT PHASE: Post-Construction

INDICATORS: Responses to survey question

EXTENT OF IMPACT: 89% of respondents said resevoir enhanced the beauty of the area

CAUSE AND PROCESS:

LINK TO OTHER IMPACTS:

IMPACT B: Increase job opportunities

GROUPS IMPACTED: All residents of the area

PROJECT PHASE: Post-Construction

INDICATORS: Responses to survey questionaire

EXTENT OF IMPACT: Of 500 respondents 245 say resevoirs increase business therefore job opportunities 117 say resevoir has no effect.

CAUSE AND PROCESS:

LINK TO OTHER IMPACTS:

IMPACT C:

GROUPS IMPACTED:

PROJECT PHASE:

INDICATORS:

EXTENT OF IMPACT:

CAUSE AND PROCESS:

LINK TO OTHER IMPACTS:

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 23

NTIS#

STUDY

TITLE: Sociological Impact of a Flood Control Reservoir: Howard Pennsylvania

AUTHORS: Leadley, Samuel M.

INSTITUTION: Institute for Research on Land and Water Resources, Pennsylvania State University

BACKGROUND: Rural Sociology

PUBLICATION DATE: July 1975

OTHER REPORTS:

FUNDING GROUP: DOI/OWRT

FUNDING LEVEL:

FUNDING DATES:

STUDY OBJECTIVES: Focus on community organizational response to dam related social changes as evidence by community influentials' perceptions: 1) estimate nature of perceptions; 2) identify sociological variables related to perceptual errors; 3) estimate effects of errors in perception on community organizations.

PROJECT

NAME & LOCATION: Sayers Reservoir - Northern Pennsylvania (Howard Township) 20 mi. from State College, 10 mi. from Bellefonte, 12mi. from LockHaven. Just outside the Borough of Howard - 5mi. x 1 mi. surface area.

DESCRIPTION: Foot of Allegheny Mountains. Began as a farming community. Local trade center Now - no appreciable local industry. 80% of labor force works outside the community. Mostly old timers-Descendents of people there in the 1870's - a stable community.

PURPOSES:

PROJECT PHASE DISCUSSED: Post-Construction

METHODOLOGY

GENERAL: Sample community leaders, establish objective measures of reservoir initiated change. Select independent variables, identified in previous research as associated with perceptual accuracy.

* For property sale, percent of roads travelled from which reservoir could be seen, residence in reservoir area, residential change, projected value change of property. Newspapers received, spouse an area native, close relatives in the area, length of residence, sex, education, age, occupation.

TECHNIQUES AND DATA USED: Focused interview technique - open format fixed and open-ended questionnaire. Interviews completed in April 1969. Interview sample taken from officers of formal organizations and suggestions by interviewers. Final sample 8% people, 12 organizations selected to test impact of community leaders perceptions. Measurements of accuracy of perception: Public lands acquired, jobs eliminated, families displaced, location of proposed parks, number of new jobs created by parks, Borough's share of cost of construction of new sanitary sewer system. Variables associated with perceptual accuracy: Participation in voluntary associations involvement in local flood prevention society, actions taken to *influence* Daw decision, role in public meetings, holding public office, settlement method. Above... *

IMPACTS DISCUSSED

A) Residents perceive direction of change correctly but not the magnitude

B) Lack of community organizational response to reservoir induced changes

C)

D)

E)

IMPACT A: Residents receive direction of change correctly but not the magnitude

GROUPS IMPACTED: Residents of area

PROJECT PHASE: Post Construction

INDICATORS: Responses to questions concerning acquisition area boundary, jobs eliminated, and families displaced

EXTENT OF IMPACT: Worst error in acquisition area boundary. Mean error 3.8 sq. miles: Jobs eliminated- 87% underestimate/ 80% of this 87% err by more than 44%. Families displaced. All agree significant displacement only 1 out of 8 over-estimates. Of the 88% underestimating, 66% err by more than 66%

CAUSE AND PROCESS: Neighborhood awareness is the limiting factor in accuracy of perception. Correct estimations depend on range of contacts of an everyday nature with the neighboring area. Also if one travels roads neighboring reservoir a lot, attends meetings, holds public office, is young and male, one is more likely to correctly estimate change.

LINK TO OTHER IMPACTS: Cause of Impact B

IMPACT B: Lack of community organization response ot reserovir induced change

GROUPS IMPACTED: 12 local organizations, area residents

PROJECT PHASE: Post-Construction

INDICATORS: Questions on change in decisions, membership, and anticipated change in program put to influentials

EXTENT OF IMPACT: Few if any plans to cope with change. Only local fire company had planned to increase equipment for water rescue.

CAUSE AND PROCESS: Underestimation of degree of change associated with the reservoir and pessimism regarding in-season use of the government operated parks.

LINK TO OTHER IMPACTS: Caused in part by Impact A

IMPACT C:

GROUPS IMPACTED:

PROJECT PHASE:

INDICATORS:

EXTENT OF IMPACT:

CAUSE AND PROCESS:

LINK TO OTHER IMPACTS:

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 24

NTIS# PB 238 496

STUDY

TITLE: Criteria for evaluation of Social Impacts of Flood Management Alternatives

AUTHORS: Mack, Ruth

INSTITUTION: Institute of Public Administration (N.Y., N.Y.)

BACKGROUND: Political Science

PUBLICATION DATE: March 1974

OTHER REPORTS: This is a working paper of the NERBC, Connecticut River supplemental flood management study: Phase I.

FUNDING GROUP: New England River Basin Commission (Boston)

FUNDING LEVEL:

FUNDING DATES:

STUDY OBJECTIVES: Desire to learn where social impacts occur and what they consist of. Interested in as wide a spectrum of impacts as possible. Intend to develop criteria against which specific flood management plans can be evaluated
1) Detailed Case Studies - Flood & Dam Social Impacts
2) Method for evaluating social impacts

PROJECT NAME & LOCATION: North Springfield Dam - Black River in Vermont, near Springfield in South Eastern Vermont. Drainage area 158 sq. miles, capacity 49,500 acre feet. 2/58 construction begins. Operational 1960.

DESCRIPTION:

PURPOSES: Flood Control and Recreation

PROJECT PHASE DISCUSSED: Pre-Construction, Construction, Post-Construction

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METHODOLOGY

GENERAL: Exploratory. Use case studies to develop a method of evaluating social impacts in a coherent frame of reference. Extreme cases used to flesh out the full range of impacts.

TECHNIQUES AND DATA USED: 1) Detailed chronicles use existing information. Newspaper Accounts, interviews, inspection, etc.
2) Evaluation model consists of a type of C/B analysis using nine utility categories to evaluate impact significance. Use own judgment to fill out model categories-based on narrative

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IMPACTS DISCUSSED

A) Anxiety resulting from delay and uncertainty

B) General animosity towards the Corps

C) Increased Law Enforcement Problems

D) Loss of Town Development Options

E)

IMPACT A: Anxiety Caused by Delay and Uncertainty

GROUPS IMPACTED: People to be dislocated

PROJECT PHASE: Pre-Construction

INDICATORS: Newspaper Stories, evidence given to House Appropriations Committee by Sen. Flanders describing hardships of people in the area.

EXTENT OF IMPACT: No overall quantitative measures- 30 homes inundated - 2 peoplelose job offers because of inability to settle with Corps. One person's settlement delayed 3 times: 2-3 months each time. Another is forced to maintain 3 residences.

CAUSE AND PROCESS: Uncertainty as to the compensation they will receive from the Corps. Also cannot count on Corps promises regarding time or amount of settlement. Settlement funds are not available. People know they have to leave but cannot make the move until settlement is made and settlements seem arbitrarily delayed.

LINK TO OTHER IMPACTS: A cause of Impact B

IMPACT B: General Animosity towards the Corps

GROUPS IMPACTED: People in area near where Dam is to be built

PROJECT PHASE: Pre-Construction

INDICATORS: Comments, Congressional Testimony, Newspaper Articles

EXTENT OF IMPACT: General agreement that the Corps has not acted with the best interests of the community at heart.

CAUSE AND PROCESS: 1) Settlement - Delay with regard to dislocated families.
2) Lack of Corps commitment to replace an important section of road to be inundated by Dam
3) Corps hedging on promise to relocate a historical graveyard.

LINK TO OTHER IMPACTS:
Impact A is one cause of Impact B

IMPACT C: Increased Law Enforcement Problems

GROUPS IMPACTED: Town Government of Weathersfield and Local Residents

PROJECT PHASE: Post-Construction

INDICATORS: Comments by Officials and Residents

EXTENT OF IMPACT: General concern about the influx of undesirable people due to reservoir - vandals, hippies, criminals, increase in number of speeding and noise violations from souped-up cars of these undesirables.

CAUSE AND PROCESS: Area is not able to hire additional police. Local police not aware until too late of their responsibility or the extent of the problems. Large number of access roads to reservoir make it difficult to police.

LINK TO OTHER IMPACTS:

IMPACT D: Loss of Town Development Options

GROUPS IMPACTED: Town of Weathersfield - Near the Dam Site.

PROJECT PHASE: Post-Construction

INDICATORS: Financial status, Payments by the Connecticut Valley Flood Control Compact, Comments of Local Officials

EXTENT OF IMPACT: Increased Law Enforcement costs, loss of farmland revenue - purchased services and taxes, failure of Springfield industry to move north.

CAUSE AND PROCESS: 1) Failure of CVFCC to adequately reimburse the town for lost tax revenue
2) Change in image of town to more recreational than industry.
3) Loss of opportunity to use land for residential development.

LINK TO OTHER IMPACTS:

IMPACT E:

GROUPS IMPACTED:

PROJECT PHASE:

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 25

NTIS# PB 214-540

STUDY

TITLE: Analyzing Organizational Conflicts in Water Resource Management: A Systematic Approach

AUTHORS: Martel, Robert J. and McLaughlin, Dennis

INSTITUTION: Analytical Sciences Corporation

BACKGROUND:

PUBLICATION DATE: 9/1/72

OTHER REPORTS:

FUNDING GROUP: DOI/OWRR

FUNDING LEVEL:

FUNDING DATES:

STUDY OBJECTIVES: Develop methods to better enable planners to deal more effectively with socio-economic-political issues involved in water resource management. Analyze, diagnose, and make predictions about political conflict.

PROJECT

NAME & LOCATION: Inter-basin diversion of water from the Connecticut River in Western Massachussetts to Boston. Specifically construction of a reservoir on Northfield Mountain in Western Massachusetts Help keep Quabbin Reservoir full enough to meet Boston's water needs.

DESCRIPTION:

PURPOSES: Water supply and Hydroelectric power

PROJECT PHASE DISCUSSED: Pre-construction

METHODOLOGY

GENERAL: Analytical approach focused on complexity inherent in political conflict. Analytical framework, field research, and direct contact with the issues. Focus on circumstantial elements and deterministic trends involved in such a situation in an effort to establish predictable elements.

TECHNIQUES AND DATA USED:

Open-ended research. Participant observers- Good journalistic sense necessary. Secondary sources. 13 interviews during spring, summer, and fall of 1971.

IMPACTS DISCUSSED

A) Formation of citizens groups in opposition to the project

B) Blocking of the project

C)

D)

E)

IMPACT A: Formation of a citizens group in opposition to the project

GROUPS IMPACTED: Residents of Western Massachusetts

PROJECT PHASE: Pre-construction

INDICATORS: Interviews and secondary sources

EXTENT OF IMPACT: Small group of young Springfield lawyers form the Connecticut River information clearing house (CRIC) to coordinate and distribute information on the project. Soon established local interest groups such as the League of Women Voters became interested.

CAUSE AND PROCESS: Opposition to the broadly written language of the Metropolitan District Commission. (MDC) No limit on the number of diversion stations or amount to be diverted. No provision for evaluation of environmental impacts.

LINK TO OTHER IMPACTS:

IMPACT B: Blocking of the Project

GROUPS IMPACTED: MDC, residents of Massachusetts, especially Western Massachusetts and Boston.

PROJECT PHASE: Pre-Construction

INDICATORS: Interviews and Secondary Sources

EXTENT OF IMPACT: Project killed in the House when MDC recognized CRIC's strength with Western Mass. Legislators made compromises to tighten up the bill, but CRIC launched a last minute telephone campaign and killed the bill

CAUSE AND PROCESS: Particular aversion to the transfer of benefits from one region to another- Western Massachussetts to Boston. Also growing environmental concern of the period (1968-1970). MDC was isolated and believed they could act with more autonomy than was possible.

LINK TO OTHER IMPACTS:

IMPACT C:

GROUPS IMPACTED:

PROJECT PHASE:

INDICATORS:

EXTENT OF IMPACT:

CAUSE AND PROCESS:

LINK TO OTHER IMPACTS:

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 26

NTIS# PB 236 853

STUDY

TITLE: A Systematic Evaluation of Environmental Perceptions, Optimum Preferences, and Trade-off Values in Water Resource Analysis

AUTHORS: Pendse, Dillip, and Wycoff, J. B.

INSTITUTION: Water Resources Institute, Oregon State University in concert with University of Mass., Amherst

BACKGROUND: Agricultural Economics

PUBLICATION DATE: September 1974

OTHER REPORTS:

FUNDING GROUP: DOI/OWRR

FUNDING LEVEL:

FUNDING DATES: 1970-1974

STUDY OBJECTIVES: Ascertain trade-off values for five environmental features: Floods, water recreation, scenic view, wilderness, and historical camping and recreation park - Develop a methodology to value intangible benefits by determining intensity of satisfaction of users of water resources projects. 1) Identify opinions about reservoir 2) Determine-relationship between demographic characteristics and environmental goods. 3) Establish trade-off values for different environmental goods.

PROJECT

NAME & LOCATION Proposed Cascadia dam on south Santiam River in Western Oregon in Linn County. Rock fill dam storage capacity - 160,000 acre feet estimated cost - 58.4 million.

DESCRIPTION:

PURPOSES: Flood Control

PROJECT PHASE DISCUSSED: Pre-Construction

METHODOLOGY

GENERAL: Priority evaluation technique to test allocation decisions when faced with limited resources and competing, costed alternatives. Apply technique to measure trade-offs of environmental goods.

TECHNIQUES AND DATA USED: Random sample of 300 residents of Willamette Basin interviewed in June and July 1973. Questionnaire on opinions of environmental conditions, optimum preferences and trade-off values. Use pictoral representations of three development scenarios to elicit trade-offs. Also, respondents asked to monetarily value the situations.

IMPACTS DISCUSSED

A) Widely varying perceptions of the value of the Proposed project

B)

C)

D)

E)

IMPACT A: Widely varying perceptions of the benefits of the proposed project

GROUPS IMPACTED: Residents of the Willamette Basin

PROJECT PHASE: Pre-Construction

INDICATORS: Responses to survey - Opinions about the dam/environmental trade-offs

EXTENT OF IMPACT: Residents of the Santiam Valley much more skeptical about the benefits that could accrue. 60¢ of the Valley residents compared to 30% of Basin residents see possible negative impacts. Only 50% of Valley as opposed to 70% of Basin see an increase in recreation activities.

CAUSE AND PROCESS: 60% of valley residents feel dam will reduce damages to life and property 'Little or none at all.' They value historical campground and recreation site over the prevention of floods. Also experience of Foster and Green Peter Dams shows that economic benefits do not necessarily accrue.

LINK TO OTHER IMPACTS:

IMPACT B:

GROUPS IMPACTED:

PROJECT PHASE:

INDICATORS:

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 27

NTIS#

STUDY

TITLE: Reservation, Reservoir and Self Determination: A case study of reservoir planning as it affects an Indian Reservation

AUTHORS: Peterson, John H. Jr.

INSTITUTION: Water Resources Research Institute of Mississippi

BACKGROUND: Anthropology

PUBLICATION DATE: 1975

OTHER REPORTS:

FUNDING GROUP: DOI/OWRR (In Part)

FUNDING LEVEL:

FUNDING DATES:

STUDY OBJECTIVES: Documentation of a single case study of reservation/ reservoir planning.

PROJECT

NAME & LOCATION: Multipurpose reservoir (Edinburg Dam) proposed for the Pearl River in Vebosha County, Mississippi: 49,100 acres required for the project. [Choctaw own 2,700 within the boundary of the project] 16,000 acre surface area - 18 mi x 3.5 mi.

DESCRIPTION: Basin is predominantly rural - City of Jackson is only Urban Center in the Pearl River Basin. Forest 6% of land in basic crops 14% Pasture, 12%, Urban and

other - 7% population growing but mainly in Jackson

PURPOSES:

Flood Control, Water Quality, Recreation, Navigation

PROJECT PHASE DISCUSSED: Pre-Construction

METHODOLOGY

GENERAL: Documentation of a single case study - illustrate complexity of water resource development involving Indian tribes

TECHNIQUES AND DATA USED:

Secondary sources, Personal observation

IMPACTS DISCUSSED

A) Lack of involvement of Indian tribe in Reservoir Planning

B)

C)

D)

E)

IMPACT A: Lack of involvement of Indian Tribe in Reservoir Planning

GROUPS IMPACTED: Choctaw Indians, Army Corps, Bureau of Indian Affairs, Mississippi State Government

PROJECT PHASE: Pre-construction

INDICATORS: Mention of tribe in Corps hearings
Mention of Corps in tribe meeting minutes
Separate plans for development

EXTENT OF IMPACT: Tribe interested in creating a tourism center allied to a reservoir since 1964. Corps involved in planning for Pearl River Basin Development including the Edinburg project.since 1965. Hearings held in 1965 and 1970-71. No formal contact between tribe and Corps until 1972.

CAUSE AND PROCESS: 1) Lack of centralized professional planning in tribe leading to only vague plans for developing tourism center. This changed in 1972 with tribal reorganization; 2) No initiatives taken by state B.I.A. or Corps to ensure involvement of tribe or discern their interest; 3) Corps' overemphasis on informal discussions with certain tribal leaders. Diffuses interest in making formal contact.

LINK TO OTHER IMPACTS:

IMPACT B:

GROUPS IMPACTED:

PROJECT PHASE:

INDICATORS:

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 28

NTIS# PB 217 870

STUDY

TITLE: The Impact of Institutional and Political Factors on Water Management in the Upper Wabash Basin

AUTHORS: Quinn., M.C.

INSTITUTION: Water Resources Research Center, Purdue University

BACKGROUND: Political Scientist

PUBLICATION DATE: 1/73

OTHER REPORTS: Part of a larger project applying systems analysis to surface water management in the Upper Wabash Basin

FUNDING GROUP: DOI/OWRR (in part)

FUNDING LEVEL:

FUNDING DATES: 7/69 - 6/72

STUDY OBJECTIVES: 1) Identify relevant water institutions; 2) Evaluate impact of legal, administrative and political factors on water policy; 3) Assess capability of existing institutions to implement systems approach.

PROJECT

NAME & LOCATION: Numerous proposals to develop the Wabash River and its tributaries. A cross Wabash Canal linking the Ohio with The Great Lakes - more recreational opportunities and flood control reservoirs.

DESCRIPTION: Upper Wabash River Basin of Indiana - much of the northern half of the state - highly mechanized grain farming. Majority of employment in manufacturing, trade & service industries.

PURPOSES: Navigation, Flood Control, Water Quality, Recreation

PROJECT PHASE DISCUSSED: Pre-Construction

METHODOLOGY

GENERAL: Exploratory - Description and assessment of application of analytical techniques.

TECHNIQUES AND DATA USED: Review of public record; Open-ended interviews with 41 individuals highly visible in Wabash River Basin politics; Personal observation.

IMPACTS DISCUSSED

A) Opposition to projects based on sensitivity to potential future demands created by projects.

B)

C)

D)

E)

IMPACT A: Opposition to projects based on sensitivity to potential future demands created by projects.

GROUPS IMPACTED: Businesses near reservoirs, Residents of Wabash Basin

PROJECT PHASE: Pre-Construction

INDICATORS: Public statements, Responses to open ended Interview Schedule

EXTENT OF IMPACT: People express opposition to various projects
a) Flood control reservoir - You'll give people a false sense of security; damage from flood will be greater than otherwise
b) Recreation- Businesses around reservoirs depending on recreation will be hurt when dept. on Natural Resources takes water away for municipal water suppl
c) Water quality - The reservoirs will merely allow industries a new option for dealing with increasing wastes instead of forcing them to cut down wastes.

CAUSE AND PROCESS: People fear options will be reduced and that unanticipated consequences will ensue, so they oppose development.

LINK TO OTHER IMPACTS.

IMPACT B:

GROUPS IMPACTED:

PROJECT PHASE:

INDICATORS:

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 29

NTIS# PB 205 248

STUDY

TITLE: Population growth in communities in relation to water resources policy

AUTHORS: Rivkin/Carson Inc.

INSTITUTION: " " "

BACKGROUND:

PUBLICATION DATE: October 1971

OTHER REPORTS:

FUNDING GROUP: National Water Commission

FUNDING LEVEL:

FUNDING DATES:

STUDY OBJECTIVES: 1) Provide a basis for evaluating proposals aimed at influencing future population increases 2) Give a realistic assessment of the role which water resource development could play in creating new cities, spuring economic growth of small cities and improving the quality of life in rural communities.

PROJECT

NAME & LOCATION: All water resource development projects - all areas of the country. More specific analysis (by county) of water resource developments, and population change in Georgia.

DESCRIPTION: Oregon, Minnesota, and Pennsylvania

PURPOSES: Multiple

PROJECT PHASE DISCUSSED: Post Construction

METHODOLOGY

GENERAL: Use relevant published and unpublished material. Draw on experience in urban and regional development. Selective interviews with federal and local officials and people in the development field. Original statistical analysis.

TECHNIQUES AND DATA USED:

Statistical Analysis - a)Tabulation of 1950, 1960, 1970 population figures for 20,000 places and relation to location factors
b) Multiple regression analysis of water resource investment data and population data
c) Analysis of location of federal community oriented water investments

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IMPACTS DISCUSSED

A) Water resources investments do not affect population growth.

B)

C)

D)

E)

IMPACT A: Water resources investments do not affect population growth.

GROUPS IMPACTED:
4 states, Georgia, Minnesota, Pennsylvania, & Oregon

PROJECT PHASE:
Post Construction

INDICATORS:
Population figures and expenditures of USDA, HUD, FWPCA, DOC, and Corps on water, sewer, waste, treatment, reservoir, channeling, harbor, projects.

EXTENT OF IMPACT:
Water resources project investment showed no correlation with population growth. Not by location or size of county. Neither SMSA nor least populous counties affected by water resources investment

CAUSE AND PROCESS:
Water resources investment usually comes after the need is recognized, not before. Investment may permit growth, it does not cause it. Growth seems most closely allied to proximity to Metropolitan area.

LINK TO OTHER IMPACTS:

IMPACT B:

GROUPS IMPACTED:

PROJECT PHASE:

INDICATORS:

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 30

NTIS#

STUDY

TITLE: Kona Dam vs. Konatown: A sociological interpretation of selected impacts of reservoir development on a community field.

AUTHORS: Singh, Raghu N. (Kenneth Wilkinson - Consultant)

INSTITUTION: Department of Sociology and Anthropology, East Texas State U.

BACKGROUND: Sociology and Anthropology

PUBLICATION DATE: February, 1975

OTHER REPORTS:

FUNDING GROUP: DOI (In Part) under 1964 Water Resources Research Act

FUNDING LEVEL:

FUNDING DATES: 1972-1975

STUDY OBJECTIVES: Develop systematic procedures for assessing environmental impacts of a public project from a sociological perspective.

PROJECT

NAME & LOCATION: Kona Dam - one of the largest watershed development projects in process in East Texas.
Konatown - Pseudonym for a town 75 mi. N.E. of Dallas (population ?,000) in a county with no urban population.

DESCRIPTION: Konatown is the biggest town. Median age 2x U.S. average, economically poor, low education levels. Konatown formerly a trading center for local cotton planters. With mechanization many have left and gone to Dallas. A decaying rural town.

PURPOSES: 1) Flood Control; 2) Municipal & Industrial Water Supply; 3) Water Quality Control; 4) Recreation

PROJECT PHASE DISCUSSED: Prior to final construction [Hope to conduct another study in 5 years after dam is completed].

METHODOLOGY

GENERAL: 1) Systematic analysis of action process (Kona Dam) intended to alter or change environment
2) In depth study of selected aspects of community field (Konatown) that was to be most affected
3) Study interaction between action processes and community field and their impacts on each other.
Pushing for a more microscopic approach (qualitative, social field-community oriented analysis)

TECHNIQUES AND DATA USED: 1) "Action Guide" - questionnaire (Open-Ended) on initiation, implementation, and achievements-submitted to 16 leaders
2) Content analysis of local newspaper RE: Dam 3) Official records
4) Delphi on goals, past and future impacts, and alternatives submitted to selected 'experts' - Influential leaders and professional experts on Dam (technicians) 3 people selected 5) Survey of Konatown residents [Random sample] through interviews - 166 people interviewed

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IMPACTS DISCUSSED

A) Favorable Public Reaction

B) Cause community conflict

C) Increase in residential mobility

D)

E)

IMPACT A: Favorable Public Reaction

GROUPS IMPACTED: Impact on individuals tied to following variables 1) large household 2) Male 3) Married 4) In a high prestige occupation 5) Have belonged to high income bracket 6) A highly valued home 7) Low use of community services 8) Active in community organizations 9) High level of knowledge about project. Impact not related to age, race, education, attitude toward ecology movement, years in community, or level of satisfaction with services

PROJECT PHASE: Pre-Construction

INDICATORS: Responses to Survey Questions

EXTENT OF IMPACT: 86% agree entire community will benefit, 90% agree that economic and other benefits far greater than environmental consequences. 75% strongly favor the project, 12% moderately favor it.

CAUSE AND PROCESS: Primary emphasis of favorability is economic. More industry will come. Business opportunities, more jobs, helping economy in general were frequently mentioned impacts. Most often people did not know the specific impacts of the dam, they felt though that they would be favorable. Most favorable people- young whites in higher income brackets who are satisfied with community services.

LINK TO OTHER IMPACTS:

IMPACT B: Cause Community Conflict

GROUPS IMPACTED: Konatown Leadership and Residents

PROJECT PHASE: Pre-Construction

INDICATORS: Responses to open-ended survey questions hostility towards an influential figure identified with trying to stop the project.

EXTENT OF IMPACT: Several name banker 'x' as conflict producing. Several label community organizations as incompetent. Many feel community leadership has failed. Asked to name organizations supporting the Dam, of the 13 named only 4 were from Konatown.

CAUSE AND PROCESS: Project has been delayed by internal community conflicts; outside organizations have overshadowed local groups making local leadership look bad.

LINK TO OTHER IMPACTS: High favorability combined with delays heighten sense of alienation and dissatisfaction with community leadership.

IMPACT C:

Increase in residential mobility [Shift in residential patterns]

GROUPS IMPACTED: See Impact A

PROJECT PHASE: Pre-Construction

INDICATORS: Official Records

EXTENT OF IMPACT: Many people have moved to the west side of town. New Housing Development increasing desertion of central town residences. 68 families moved from reservoir area. 78% move to Konatown. Most built on West Side in New Housing Development.

CAUSE AND PROCESS: Dam in on the west side [Population in Konatown stabilizing while county population is decreasing]

LINK TO OTHER IMPACTS:

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 31

NTIS# PB 192 636

STUDY

TITLE: Anticipations of Change: A Socio-Economic Description of a Kentucky County Before Reservoir Construction

AUTHORS: Smith, Charles Robert

INSTITUTION: Water Resources Institute, University of Kentucky

BACKGROUND: Anthropologist

PUBLICATION DATE: 1970

OTHER REPORTS:

FUNDING GROUP: DOI/OWRR

FUNDING LEVEL:

FUNDING DATES:

STUDY OBJECTIVES: Part of a larger study of three drainage areas in Kentucky now under consideration for stream control projects- social benefits and costs of each phases of reservoir development. Specific study: Baseline data on one of the areas and data on the incipient impact of the proposed reservoir.

PROJECT

NAME & LOCATION: Black River Reservoir- In Walnut County in Central Kentucky. Study for Dam proposed to Congress by the Corps in 1964. Idea around for 5 years.

DESCRIPTION: Walnut County - Rich Bottom Lands good for tobacco and corn. Hillsides good for cattle grazing predominantly an isolated farming community. Population decreasing and no direct access to interstate system small, well-integrated population. Most people born and raised there.

PURPOSES: Flood Control

PROJECT PHASE DISCUSSED: Pre-construction

METHODOLOGY

GENERAL: Ethnographic analysis: Informal discussions with local residents, review of secondary materials, participant observation

TECHNIQUES AND DATA USED:

IMPACTS DISCUSSED

A) Economic Benefits forseen

B) Limited expectation of flood control benefits

C) Anxiety over relocation

D) Fear of undesirable changes

E) Perceived necessity for County initiative

IMPACT A: Economic Benefits foreseen

GROUPS IMPACTED: Local merchants of Walnut County

PROJECT PHASE: Pre-construction

INDICATORS: Comments made to researchers

EXTENT OF IMPACT: Many believe that the reservoir is their only salvation. Business is not growing. Economic benefits most widely mentioned.

CAUSE AND PROCESS: Reservoir will be in the midst of a triangle formed by three urban areas. Money brought in by tourists and new permanent residents will turn over 7 times in the county and thereby help everyone.

LINK TO OTHER IMPACTS:

IMPACT B: Limited expectation of flood control benefits

GROUPS IMPACTED: Farmers of Walnut County

PROJECT PHASE: Pre-construction

INDICATORS: Comments to researchers

EXTENT OF IMPACT: A few farmers mention the flood control benefits they will receive from reservoir contruction. Flood control is mentioned primarily by farm people

CAUSE AND PROCESS: Farmers favor project but are reluctant to be too vocal because some of their friends will be relocated by the project.

LINK TO OTHER IMPACTS:

IMPACT C: Anxiety over relocation

GROUPS IMPACTED: 50 families to be relocated; their friends and relatives in the area

PROJECT PHASE: Pre-construction

INDICATORS: Comments of the people to be relocated: stress related health problems attributed to relocation

EXTENT OF IMPACT: Most are resigned to the fact that the dam will be built. Question is when and how much will they receive. General feeling of not being able to plan the future. Fear of not being able to puchase an equivalent piece of land. Older people have been particularly affected - one man suffers a stress-related stroke, an elderly couple loses the will to live as a result of anxiety over the Dam.

CAUSE AND PROCESS:

Corps procedure for acquiring land cause great uncertainty. Fear of rising land costs and housing shortage in Walnut County exacerbate the situation. Many people will have to give up homes they have lived in all their lives.

LINK TO OTHER IMPACTS:

IMPACT D:

Fear of undesirable changes

GROUPS IMPACTED: Residents of Walnut County especially those to be relocated and older residents

PROJECT PHASE: Pre-construction

INDICATORS: Comments to researchers

EXTENT OF IMPACT: Wide range of fears: Well integrated community life will suffer, county will go wet, little economic benefit, harm to agricultural productivity, destruction of natural beauty of area.

CAUSE AND PROCESS: Several causes - Physical fact of the reservoir-
1) Will take away valuable farm land
2) Will attract undesirable elements of neighboring urban areas
3) Land prices will rise making it difficult to relocate
4) Strain limited resources of the county - little room to grow.

LINK TO OTHER IMPACTS:

Counter to Impact A

IMPACT E: Perceived necessity for county initiative

GROUPS IMPACTED: Residents of Walnut County

PROJECT PHASE: Pre-Construction

INDICATORS: Comments to researchers

EXTENT OF IMPACT: a) Need to expand school programs and possibly build a new school. b) Government structure will have to become more professional

CAUSE AND PROCESS:

a) Influx of students from urban areas as people are attracted by the dam.
b) Increased tax revenues and problems associated with migrants and tourists.

LINK TO OTHER IMPACTS:

Outgrowth of Impact D

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 32

NTIS# PB 224-833

STUDY

TITLE: Social and Cultural Impact of a proposed Reservoir on a Rural Kentucky School District

AUTHORS: Smith, Charles (Preface by Phillip Drucker)

INSTITUTION: University of Kentucky Water Resources Institute

BACKGROUND: Anthropology

PUBLICATION DATE: January 1973

OTHER REPORTS: Allied to reports on phases 3,4, & 5
Reported in other reviews

FUNDING GROUP: DOI/OWRR (In Part)

FUNDING LEVEL:

FUNDING DATES: 7/1/71 - 6/30/72

STUDY OBJECTIVES: Project: The impact of a new reservoir on the public school system of an area-Spencer County. 1) Describe basic cultural & social differences between Spencer and Jefferson (Louisville) County Schools 2) Define major differences 3) Make recommendations - reduce or avert conflict likely to be created.

PROJECT

NAME & LOCATION: Taylorsville Reservoir proposed for the Salt River, 25 mi. S.E. of Louisville, 60 mi. West of Lexington. 3000 acre multipurpose reservoir.

DESCRIPTION: Taylorsville, pre-dominantly rural and agricultural some commuting for Louisville from other parts of Spencer County

PURPOSES: Flood Control and Recreation

PROJECT PHASE DISCUSSED: Pre-Construction

METHODOLOGY

GENERAL: Anthropological - Malinowski's functional theory- Culture is an organized whole, institutions are the basic unit of organization. Focus on schools material apparatus, personnel organization, activities, linkages to the community, charter, and perceptions' of the purpose of education

TECHNIQUES AND DATA USED:

Existing quantitative data from Ky. dept. of education. Quantitative and subjective data from interviews with school administrators and teachers in Jefferson and Spencer Counties. Participant observation - Smith lives in Spencer County and participates in local activities. Made numerous visits to observe schools in both counties.

IMPACTS DISCUSSED

A) Anxiety over impacts of construction on school district.

B)

C)

D)

E)

IMPACT A: Anxiety over impacts of construction on school district.

GROUPS IMPACTED: School Board of Spencer County, Teachers, & Residents of Spencer County

PROJECT PHASE: Pre-Construction

INDICATORS: Comments made to researchers. Request for results of the study.

EXTENT OF IMPACT: During 1968 & 1969 several residents of the county expressed concern about the impact of the proposed reservoir on the local institutions. Especially the school district. Spencer County School Board authorized Smith to make the study, gave him full access to records and affording him extensive cooperation. Their condition - supply the board with the results of his study.

CAUSE AND PROCESS:

Concern over the impact of the anticipated influx of new pupils from nearby Louisville as people move to be near the reservoir and within commuting distance of Louisville. Lack of knowledge about the nature of the urban school district from which many new pupils would be coming.

LINK TO OTHER IMPACTS:

IMPACT B:

GROUPS IMPACTED:

PROJECT PHASE:

INDICATORS:

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 33

NTIS# PB 197-672

STUDY

TITLE: Socio-Economic Study of Multiple Use Water Supply Reservoirs

AUTHORS: Ralph Stone and Company, Santa Monica, California

INSTITUTION: " " "

BACKGROUND: Private contracting firm

PUBLICATION DATE: January 2, 1971

OTHER REPORTS:

FUNDING GROUP: DOI/OWRR

FUNDING LEVEL:

FUNDING DATES:

STUDY OBJECTIVES: 1) Identify major incremental socio-economic costs and benefits. 2) Determine if costs related to any use were inimical to water supply function. 3) Develop decision-making formulations based on socio-economic cost-benefit analysis. Better integrate recreation and water supply in multi-purpose reservoir planning.

PROJECT

NAME & LOCATION: 4 California Reservoirs:

DESCRIPTION: 1)Lake Berryessa - Between San Francisco and Sacramento- Finished 1957 owned by Bu Rec. 576 sq. mi drainage area 20,700 acre area. 170 mi. per meter. 2) Lake Casitas northwest of L.A. Finished 1959 owned by Bureau of reclamation drainage area - 39 mi. area- 2710 acres 3) Lake Elsinore - S.W. of L.A. - Natural owned by public 717 drainage area, area-2000 acres 8 1/4 mi. perimeter. 4) Lake Matthews - West of L.A. - completed 1938 owned by Metropolitan water district 40 mi. drainage area, area- 2750 acres, 17 mi. perimeter

PURPOSES:
a) Berryessa - Water Supply and Recreation - Full including body contact
b) Casitas - Water supply and recreation (No body contact)
c) Elsinor - Recreation (Aesthetic only)
d) Matthews - Water supply only

PROJECT PHASE DISCUSSED: Post Construction/use

METHODOLOGY

GENERAL: Develop a benefit cost model pertinent to water supply/ recreation regulatory decisions that includes appropriate weighing of social factors. Use comparison of 4 reservoirs wtih varying levels of recreation. Primarily economic C/B relating to recreation benefits and costs and land values. Two tasks relate to social impact: Social factor weighing in the model and a nation wide survey of experience relating to reservoir recreation.

TECHNIQUES AND DATA USED:
1) Social Factor weighting: questionnaire given to principal officials of agencies concerned with management and regulation of the reservoirs (n=56). Asked to weight 15 beneficial uses of the Reservoir on a scale from 1-10
2) Nationwide survey - Information Data Survey Form sent to sanitary engineers or environmental Health offices of state health departments. Questions on State policies, experiences with reservoir management, key problems, personal opinions on factors causing degradation of the reservoir.

IMPACTS DISCUSSED

A) Perceptions of benefits related to reservoir type

B) Reservoir recreation does not cause major problems for management

C) Different activities perceived as having different effects on water quality

D)

E)

IMPACT A: Perceptions of benefit related to reservoir type

GROUPS IMPACTED: Principal officials of reservoir related agencies of 4 reservoirs studied

PROJECT PHASE: Post-construction

INDICATORS: Responses to Questionnaire

EXTENT OF IMPACT: Respondents tended to weight most highly those activities permitted at their reservoir.

CAUSE AND PROCESS:

LINK TO OTHER IMPACTS:

IMPACT B: Reservoir recreation does not cause major problems for management

GROUPS IMPACTED: Sanitary engineers/environmental health officers of the 50 states.

PROJECT PHASE: Post-construction

INDICATORS: Responses to questionnaire on problems encountered.

EXTENT OF IMPACT: Of the 39 states permitting recreational reservoir use, 21 report no or only few problems. Major problems cited: Land pollution, management inadequacies, and conflicts of interest (fishing vs potable water, controlled subdivision vs uncontrolled increasing use)

CAUSE AND PROCESS: Few problems because of complete treatment of water, good control of the reservoir area and large amount of surface water in the area.

LINK TO OTHER IMPACTS:

IMPACT C: Different activities perceived as having differing effects on water quality

GROUPS IMPACTED: Sanitary Engineers/environmental health officers of 50 states

PROJECT PHASE: Post-Construction

INDICATORS: Responses to question on what contributes most to degradation of water quality.

EXTENT OF IMPACT: 75% judge hunting, fishing, and sailing having little or no impact, 53.7% put picnicking in the same category. 75-83% judge camping, motor boating, swimming, and waterskiing in the low to moderate range. Agreement stronger on effects of hunting, fishing, and sailing than on camping, boating and swimming.

CAUSE AND PROCESS:

LINK TO OTHER IMPACTS:

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 34

NTIS# PB 212 254

STUDY

TITLE: The Social Impact of the Libby Dam-Lincoln County: the case of absentee or extra-local influence

AUTHORS: Tureck, Hugo

INSTITUTION: Joint Water Resoureces Research Center, Montana University

BACKGROUND: Sociology

PUBLICATION DATE: 1972

OTHER REPORTS:

FUNDING GROUP: DOI/OWRR & University of Montana Agricultural Experimentation Station

FUNDING LEVEL:

FUNDING DATES:

STUDY OBJECTIVES: Set up parameters of local community versus outside control, stability vs. non-stability. Establish foundations for later studies using survey data

PROJECT

NAME & LOCATION Libby Dam- Lincoln County, Montana on the Kootenai River- North Western Corner of Montana bordering Canada

DESCRIPTION:

PURPOSES: Flood Control, Recreation

PROJECT PHASE DISCUSSED: Pre-Construction, Construction

METHODOLOGY

GENERAL: Baseline Data generation using primarily secondary sources and participant observation. Setting up survey of local residents

TECHNIQUES AND DATA USED: Content analysis of local newspapers, preliminary informal interviews, random sample survey of local residents - 643 people interviewed on background and attitudes toward the Dam, rural vs. urban living and the Corps. Some open-ended questions on dam's effect. Interviews on decision - making. Interviews with 79 people relocated - focus on migration experience.

IMPACTS DISCUSSED

A) Apathy and alienation among local residents

B) Lack of conflict over dam construction

C)

D)

E)

IMPACT A: Apathy and alienation among local residents

GROUPS IMPACTED: Local residents

PROJECT PHASE: Pre-Construction

INDICATORS: Responses to informal interviews

EXTENT OF IMPACT: Everyone accepts that the Dam is coming. Very little interest in it now- lack of conflict. Most view Dam's coming as anti-climatic. Residents adapt to the Dam by doing very little.

CAUSE AND PROCESS: People have known the dam is coming for over 20 years. Big controversy arose in the 1950's over location. That was the last great issue. Corps talk about large benefits probably arising alienates people who have come to see these statements as illusions. Changes will most likely be negative and out of their control. Also, area is accustomed to extra-local entities controlling the life of the area.

LINK TO OTHER IMPACTS:

IMPACT B: Lack of conflict over dam construction

GROUPS IMPACTED: Local residents

PROJECT PHASE: Construction

INDICATORS: Responses to informal interviews

EXTENT OF IMPACT: No great issues or problems arise over the construction of the dam.

CAUSE AND PROCESS: People view construction as a passing phase that will leave a reservoir and little else. Have very few illusions about the dam or its benefits.

LINK TO OTHER IMPACTS: Part of apathy and alienation of Impact A

IMPACT C:

GROUPS IMPACTED:

PROJECT PHASE:

INDICATORS:

EXTENT OF IMPACT:

CAUSE AND PROCESS:

LINK TO OTHER IMPACTS:

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 35

NTIS#

STUDY

TITLE: Forced Resettlement and Attitude Change: A Study of Cognitive Dissonance

AUTHORS: Webb, Vincent Joel

INSTITUTION: Department of Sociology, University of Nebraska-Omaha

BACKGROUND: Sociologist

PUBLICATION DATE: 1969 [Master's Thesis]

OTHER REPORTS:

FUNDING GROUP: Partly funded by an Army Corps Fellowship

FUNDING LEVEL:

FUNDING DATES:

STUDY OBJECTIVES: Study the relationship between attitude change and behavioral change in a forced Resettlement situation
1) Do attitudes change from negative to positive
2) Any variations in change [degree & process]
3) What are the bases for variation

PROJECT

NAME & LOCATION: Tuttle Creek Reservoir - 6 mi. 100 mi. west of Kansas City, North of Manhattan, Kansas in the Blue River valley. Construction begun 1952, completed 1962- Surface area 15,800 acres cost 79,983,000. (Inundates parts of Marshall, Potiowatomie, & Riley Counties.

DESCRIPTION: Blue River valley - One of earliest settled valleys in Kansas. Fertile bottom lands attract pioneers, particularly Swedes. Many communities over 100 years old. Rural - 13 small communities.

PURPOSES: Flood control for Topeka, Manhattan, Lawrence, & Kansas City

PROJECT PHASE DISCUSSED: Post-Construction

METHODOLOGY

GENERAL: Apply theories of cognitive dissonance to a water resources situation. Use a "non-experimental" case study to test theories' applicability. Test hypotheses about behavioral and attitudinal change. Measure attitude change and attitude intensity. Concentrate solely on those people who were relocated, attitudes before and after resettlement.

TECHNIQUES AND DATA USED: Before- existing documents - letters of opposition, petitions, congressional testimony, articles - Focus on opposition, memberships, activities.

After- survey questionnaire with Lickert scaled items. Measure anti-reservoir attitudes.
Population- All heads of households who opposed reservoir and were resettled because of it. Of the 558 resettled, 458 opposed it according to 'Historical' Documents. Mail questionnaire. 54 questions - Personal characteristics, attitude re: reservoir, alienation. 287 responses (626%) (includes 31 interviews of non-respondents)

IMPACTS DISCUSSED

A) Attitudes about reservoir change after resettlement

B) Opposition attitudes supported by high levels of alienation

C)

D)

E)

IMPACT A: Attitudes about reservoir change after resettlement

GROUPS IMPACTED: Heads of households who opposed project initially and were resettled

PROJECT PHASE: Post-construction

INDICATORS: Responses to questions on attitudes about reservoir and records of movement

EXTENT OF IMPACT: 42% change attitudes about reservoir/58% do not change

CAUSE AND PROCESS: 95% of those who re-settled in urban areas changed their attitudes. Only 18% of rural non-farm and 13% of rural farm resettlements changed attitudes. Change directly related to migratory decision. Not linked to income or amount received for resettlement.

LINK TO OTHER IMPACTS:

IMPACT B: Opposition supported by alienation

GROUPS IMPACTED: Heads of households who opposed reservoir, were resettled, and continued to oppose project

PROJECT PHASE: Post-construction

INDICATORS: Responses to questions on attitudes and alienation

EXTENT OF IMPACT: Of the 45% who were alienated 94% had not changed their attitude about the reservoir. Of the 55% who were not alienated, 73% had changed attitudes about the reservoir.

CAUSE AND PROCESS: Alienation is functional in reducing dissonance. Anti-reservoir attitudes plus alienation make previously dissonant relations consonant.

LINK TO OTHER IMPACTS:

IMPACT C:

GROUPS IMPACTED:

PROJECT PHASE:

INDICATORS:

EXTENT OF IMPACT:

CAUSE AND PROCESS:

LINK TO OTHER IMPACTS:

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 36

NTIS#

STUDY

TITLE: Formulation of techniques to predict the impact of major water resource construction projects on local government finances

AUTHORS: Wicks, John H; Taylor, Alan H.

INSTITUTION: University of Montana: Montana University Joint Water Resources Research Center

BACKGROUND:

PUBLICATION DATE: 6/30/72

OTHER REPORTS:

FUNDING GROUP: DOI/OWRR

FUNDING LEVEL:

FUNDING DATES: 7/1/71 - 6/30/72

STUDY OBJECTIVES: Provide guidelines for aniticipating the impact of water resource construction projects on local government. Empirical estimation of predictors of change in expenditure levels of various government functions and tax base.

PROJECT

NAME & LOCATION: 4 dams in Montana

DESCRIPTION:

Hungry Horse - Flathead County - N.W. Montana on the Flathead River, S. Fork.
Tiber - Liberty County - N. Central Montana on the Marias River
YellowTail - Big Horn County - S.E. Montana
Libby - Lincoln County - N.W. corner of Montana on Koontenai River

PURPOSES: Not Given

PROJECT PHASE DISCUSSED: Construction

METHODOLOGY

GENERAL: Two Step
1) Base line evaluation of changes in local government expenditures. For 56 counties in Montana- Belief that water resource projects would affect local expenditures in a 'normal' manner.
2) Case study approach. Look at effect of contruction of 4 dams in Montana on local government expenditures

TECHNIQUES AND DATA USED: Procedure for Part 2
1) Test for relation between changes in construction employment and effects on local government expenditures. Use Corps and recreation employment figures and county financial reports using multiple regression analysis.
2) Interview local government officials and others (especially newspaper editors) who were in the area at the time to determine whether expenditures reported in lst. step satisfied 'normal' needs of the community.

IMPACTS DISCUSSED

A) Local government services not affected

B)

C)

D)

E)

IMPACT A: Local government services not affected

GROUPS IMPACTED: Residents of Flathead, Lincoln, Bighorn, and Liberty Counties

PROJECT PHASE: Construction

INDICATORS: Relationship between employment levels and government expenditure - multiple comments by local officials and newspaper editors.

EXTENT OF IMPACT: Tests for relationship between employment levels and government expenditures yield few statistically significant coefficients. Also no lead or lag pattern could be found. Local officials say few needs not met. School enrollemnts, law enforcement, traffic, and child support problems, mentioned but general consensus was that construction placed little strain on local government.

CAUSE AND PROCESS: Authors speculate that the reason for the failure of employment levels to predict expenditures is the statutory limits on expenditure and revenue powers of local governments in Montana. Thus the local governments generally do well enough to 'get by.'

LINK TO OTHER IMPACTS:

IMPACT B:

GROUPS IMPACTED:

PROJECT PHASE:

INDICATORS:

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 37

NTIS# PB 236 034

STUDY

TITLE: Socio Economic Impact of Estuarine Thermal Pollution

AUTHORS: Williams, John S; Speigel, Stephen

INSTITUTION: Metro Study Corporation (Washington D.C.)

BACKGROUND:

PUBLICATION DATE: 1974

OTHER REPORTS:

FUNDING GROUP: DOI/OWRR

FUNDING LEVEL:

FUNDING DATES:

STUDY OBJECTIVES: Analyze the impact of thermal pollution on those inhabitants and visitors to the coastal areas adjoining Barnegat Bay most likely to be affected by the Oyster Creek nuclear station. Relationship of economic impact, recreational activity, and orientation to recreation to attitudes toward environment and the nuclear plant is examined

PROJECT

NAME & LOCATION: Oyster Creek nuclear plant - New Jersey. On boundary of Ocean and Lacey townships. (Ocean County) As of 1973 it had been in operation for 4 years. Provides substantial tax revenue and jobs to local community.

DESCRIPTION:

PURPOSES: Power Generation

PROJECT PHASE DISCUSSED: Post-Construction

METHODOLOGY

GENERAL: *Field Investigation* - Socio-Economic Survey of different user groups and local political leaders

TECHNIQUES AND DATA USED: Questionnaire developed concerning, recreation activities and attitudes, environmental attitudes, attitudes toward the power plant, economic consequences for specific groups, demographic characteristics. Interviews administered in summer 1973 by 4 local interviewers. Only people between 20 and 65 and who had been in the area longer than 3 years were questioned. Every 10th. house of 6,000 housing units in Ocean County was chosen (from aerial photographs) - 35% unavailable, 10% unavailable, - Final N= 318 Households. Supplementary. Interviews with local marina owners, commercial fishermen and clammers. Also in-depth interviews computed with local government officials.

IMPACTS DISCUSSED

A) Differing perceptions or direction of general plant impact

B) Unequal distribution of costs and benefits of plant

C) Feel of powerless in local government

IMPACT A: Differing perceptions of the direction of the general impact of the plant

GROUPS IMPACTED: Residents of Ocean County

PROJECT PHASE: Post-Construction

INDICATORS: Responses to questions on view of plant's impact on the area

EXTENT OF IMPACT: Most people are not only aware of the plant but are (w/in 1 year) accurate about how long it's been in operation. 39% say it is good, 18% say it's good and bad, 20% say it is bad.

CAUSE AND PROCESS: 1) Perceptions vary with proximity to plant. Benefits accrued from plant from taxes also affect view of plant impact. Lacey Township which gets substantial tax revenue 74% say good, Ocean and Union townships - 23% say the plant is good. Recreation enterprise owners and managers - 32% say it is good.

LINK TO OTHER IMPACTS:

Related to Impact B

IMPACT B: Unequal Distribution of Costs and Benefits

GROUPS IMPACTED: Residents of Ocean County

PROJECT PHASE: Post Construction

INDICATORS: Responses to Survey Questionnaire, Census Data

EXTENT OF IMPACT: Overall benefits of the plant are overwhelming but not necessarily local. Power is consumed elsewhere. Nonetheless because of jobs and tax revenues the C/B ratio is good for the local area ($1.85/$1) But 2 groups - shell fisherman and marina operators pay disproportionate amount of the cost.

CAUSE AND PROCESS:
1) Shellfish markets are losing business because of fear of contamination
2) Marina's are not gaining more business because of changes in water flow and water quality due to plant

LINK TO OTHER IMPACTS:
Partial explanation for differing views on value of the area.

IMPACT C:
Feeling of powerlessness in local governments

GROUPS IMPACTED: Local governments of Lacey, Ocean, and Long Beach townships

PROJECT PHASE: Post Construction

INDICATORS: Comments during in-depth interviews

EXTENT OF IMPACT: All three townships report a general feeling of powerlessness with regard to the power company and AEC. They complain that they do not get accurate or complete information

CAUSE AND PROCESS: 1) Lack of local technical expertise in the area of nuclear power. "We aren't atomic scientists." General complaint about technical jargon and the confusion it creates
2) Criticisms stronger in areas not receiving direct tax benefits from the plant.

LINK TO OTHER IMPACTS:

SOCIAL IMPACTS OF WATER RESOUCES DEVELOPMENTS: STUDY SUMMARY

ID# 38

NTIS#

STUDY

TITLE: Water Quality vs. Residential Development: Political and Administrative Aspects of Water Quality Maintenance in Perry and Clinton Reservoirs

AUTHORS: Wyman, Sherman

INSTITUTION: Kansas Water Resources Research Institute

BACKGROUND:

PUBLICATION DATE: July 1972

OTHER REPORTS:

FUNDING GROUP: DOI/OWRR

FUNDING LEVEL:

FUNDING DATES: July, 1970 - June, 1972

STUDY OBJECTIVES: 1) Uncover variables important to policy formation in Perry and Clinton Reservoirs 2) Better understanding of variables which are important to individual or collective behavior. Examine relationship between residential development and water quality.

PROJECT

NAME & LOCATION

DESCRIPTION: Two reservoirs in Eastern Kansas - Near large urban areas: Perry Reservoir in Jefferson County 25 mi. East of Topeka near Lawrence. Clinton reservoir in Douglas County. 12,000 acre reservoir. Jefferson County - rural, downward population trend since 1900. Douglas County primary urban though not Metropolitan - highest poulation growth rate in the state.

PURPOSES: Not discussed

PROJECT PHASE DISCUSSED: Perry: End construction (filling)
Clinton: Just prior to construction

METHODOLOGY

GENERAL: Gen'l Method: A systems approach to policy analysis; look at constraints that determine nature of inputs into the political system. Focus on local decision makers- local government, developers, and property buyers. Emphasis on the process of policy making. Survey local decision-makers to elicit their attitudes toward the relationship between development, water qulaity, and policy process.

TECHNIQUES AND DATA USED: Three Gruops Surveyed:
1) Property buyers- -mailed questionnaire follwed by random interviews
2) Local and State Government Officials- questionnaire
3) Developers: difficult to contact and difficult to apply interview schedule

All data on Perry Reservoir; Clinton was just commencing.

IMPACTS DISCUSSED

A) Create concern for water quality, but not political activity

B) Desire on part of local residents to solve their own problems

C) Low local government interest in water quality

D) Low interest in water quality by larger developers

E)

IMPACT A: Create concern for water quality,but not enough to create political activity

GROUPS IMPACTED: Property buyers around reservoir

PROJECT PHASE: Post-Construction

INDICATORS: Responses to questions regarding future action given decrease in water quality, and questions on water quality.

EXTENT OF IMPACT: Want good water quality - 63.5% won't build if W.Q. won't allow body contact. Yet won't try local political action if W.Q. deteriorates 78% will sell, 71% will shift locus of recreation. Those most concerned with water pollution are least likely to build, stay after building, or use for recreation when W.Q. deteriorates.

CAUSE AND PROCESS: 1) Many are only weekend residents (47%) Coming from metropolitan areas 2) Many nearby reservoirs with good water qulaity 3) Many bought for investment (38%) or recreation (27%) Investors will sell early to cut losses. Recreationists will go elsewhere and avoid unpleasant political process.

LINK TO OTHER IMPACTS:

IMPACT B: Desire on the part of local residents to solve their own problems

GROUPS IMPACTED: Property buyers and developers

PROJECT PHASE: Post-construction

INDICATORS: Responses to questions on who should supply sewer service for reservoir area

EXTENT OF IMPACT: Developers, property owners association and special districts most preferred. Other government agencies rank low. Others can provide funds but control should be very local.

CAUSE AND PROCESS: Little thought given to long term sewage needs. Naive reliance on developers after their business is done.

LINK TO OTHER IMPACTS:

IMPACT C: Lack of local government interest in water quality issues.

GROUPS IMPACTED: Local government, residents or reservoir area, state government

PROJECT PHASE: Post-construction

INDICATORS: Responses of government officials (state and local) to questions on water quality policy and maintenance. Is W.Q. a problem? Are you satisfied with government performance regarding W.Q?

EXTENT OF IMPACT: In general, water quality seen as important in general by equal proportions of state and local officials (66%). With specific regard to W.Q. in reservoirs in Kansas, 60% of state officials feel it's important, 33% of local officials feel it's important. Local officials most satisfied with government performance with regard to water quality.

CAUSE AND PROCESS: Local officials feel a vigorous practice of W.Q. maintenance might discourage development. Little thought given to long-run implications of decreasing water quality.

LINK TO OTHER IMPACTS: Contributes to impact B. Interest in very local solutions/non-traditional

IMPACT D: Large developers have little interest in water quality

GROUPS IMPACTED: Developers, local residents, local government

PROJECT PHASE: Post-construction

INDICATORS: Discussions in open ended interviews with some of the developers around Perry. Their responses to questions about sewage service

EXTENT OF IMPACT: Two types of developers: conservator-local, tends to have small developments, exploitive outsiders: more related to large developments. Most larger developers, despite capital advantages, offer very minimal sewage systems- septic tanks

CAUSE AND PROCESS: 1) Sewage treatment does not sell, swimming pools do. 2) Large developer only concerned with area during land selling period 3) Assumption government will accept responsibility 4) Small, local developer tends to view the area from a different time perspective, they were there before the reservoir. 5) Easy to create special districts and shift cost to property buyer.

LINK TO OTHER IMPACTS:

IMPACT E:

GROUPS IMPACTED:

PROJECT PHASE:

CHAPTER 3: SUMMARY OF STUDY CHARACTERISTICS

To make the information contained in the individual study summaries more accessible, these next two chapters provide summaries of the key data. This chapter discusses the general characteristics of the studies--who did the study, when, for what purposes, using what methods and data sources, and on what projects. When combined with the impact summary of Chapter 4, these summaries provide a quick comprehensive overview of the information contained in the study summaries. At a glance you can find what types of impacts relate to what types of projects and what methods were used to measure the impacts. In addition, these chapters review the distribution of study and impact characteristics. On the basis of these distributions, certain observations about the state of research on the social impacts of water resources development protects are presented.

Table 3-1 is a summary matrix of the key characteristics of the studies reviewed in Chapter 2, excluding a summary of their impacts. Ordered by study number, the table gives the date of publication, background of the researchers (where given), the type, location, and purposes (where given) of the project discussed, the objectives of the research, the general method employed, and the data sources used. These last three methodological items were taken directly from the texts of the studies, especially as regards the objectives of the research. Method refers to the general conceptual basis for the study: are hypotheses being tested? Is a model being applied? What is the overall character of the research--qualitative, microscopic, quantitative, empirical, anthropological, research review? Data sources are the specific techniques used to employ the method of the study -- participant observation, content analysis, random sample questionnaires, interviews with officials, etc. This table is meant to be a guide to the information found in the individual study reviews; the items here do not represent the full range of data on these points contained in the summaries.

DISTRIBUTIONS

Date of Publication -- Figure 3a represents the distribution over time of research done on the social impacts of water resources development projects. Clearly, the interest in social impact research relating to water resources has been increasing over the last five years. After reviewing bibliographies of research in the area covering the last 20 years, it is obvious that the interest is quite recent. It coincides with increasing incidence of social variables in water-related legislation and resulting Interior and Corps regulations. The low number of studies found in 1975 and 1976 should not be surprising. The dotted line over the 1975 bar represents the incomplete nature of our knowledge about research in this area. There is a distinct time lag between the completion of a report and its appearance in major bibliographies of the type upon which this review is based.

TABLE 3-1: SUMMARY OF INDIVIDUAL STUDY CHARACTERISTICS

STUDY #	DATE	AUTHORS' BACKGROUND	TYPE PROJECT - LOCATION/PURPOSES	OBJECTIVES OF RESEARCH	GENERAL METHOD	DATA SOURCES
1	1973	Pol.Sci., Ag.Econ.	Chemical Plant (S.C.)	Look at Government-Private Sector Communication relating to Water Resources Development	Socio-Political Case Study	Interviews. Public Records
2	1970	Soc. (2)	Several Reservoirs and Canals -- Irrigation, Water Supply, Recreation	Determine Social-Psychological Value Patterns Advancing or Impeding Development of Water as a Resource	Exploratory Survey Research Focusing on Social Change	Random Sample Interviewing -- Open- and Close-Ended
3	1972	Soc. (3), Econ. Pol.Sci.	Several Reservoirs and Aqueducts (Utah) -- Flood Control, Irrigation-Storage	Explore Costs and Benefits of Elements contributing to QOL of People in an Area near a Water Development Project	Survey Research and Secondary Source Research Interaction w/Organized Groups	Exploratory Open- and Close-Ended Ques.
4	1973	Soc., Hydrology (numbers not given)	Channelization and Streamlining (Utah) -- Flood Control	Develop a Model of Hydrologic and Solid-Logic systems as Relates to Urban Water Resources Planning	Primary Interest Is in Developing Model -- Limited Testing - Survey Research	Two Random Samples Using Open- and Close-Ended Ques.
5	1972	Soc. (2)	Channelization and Streamlining (Utah) -- Flood Control	Review Social Factors Affecting Flooding and Flood Damage	Brief Review of Research	Secondary Sources
6	1974	Soc. (2)	Variety of Urban Flood Control Options -- Retention Basins, Parkways, Channelization (Utah) -- Some Recreation	Determine Social Factors Affecting Flood Control Decisions. Discover and Measure Attitudes Affecting Decisionmaking	Limited Exploratory Study Aimed at Developing a Model of Flood Behavior Motivation	Two Random Samples Close- and Open-Ended Ques.
7	1975	Soc.	A Natural Reservoir in Early Stages of Recreational Development (Utah-Idaho)	Examine Competing and Conflicting Uses of Water and Social Effects of Changes in the Use of Water	Testing Hypotheses Based on Social Conflict and Ecological Field Theory -- Survey Research	Interviews with Local Officials, Mailed Questionnaire, Secondary Sources
8	1974	Soc.	Five Reservoirs, 4 Canals, 2 Power Plants (Utah) -- Irrigation, Water Use, Power, Recreation	Explore Social Conditions Where a Major Reclamation Project Was Built. Explore Methods of Evaluating Social and Aesthetic Values	Post-Audit Methodology Focusing on Humanistic Aspects of Reclamation Project	Open-Ended Ques. with Officials and Farmers. Secondary Sources including Census, Bu. Reg. and Local Records
9	1975	Soc.	Three Reservoirs (Iowa) - Flood Control, Water Quality, and Recreation	Determine Level and Character of Public Knowledge, Public Attitudes, Perception of Costs and Benefits. Examine Citizen Attitudes toward the Corps and Any Citizen Actions	Survey Research	In-depth Interviews and Mailed Ques.
10	1973	Soc. (2)	Four Reservoirs (Ohio and Kentucky). Purposes not mentioned	Develop a Composite Picture of the Migration Process. Identify Social Costs and Benefits Associated with Relocation	Develop Generalizations about Process. Survey Attitudes of Individuals w/Longitudinal Emphasis	Open- and Close-Ended Ques. Some Personal Interviews
11	1974	Geog.(2), Soc. and Anthr., Rec. and Parks	A Reservoir (Texas). Flood Control, Power, Groundwater	Reservoir Impact or Hindsight Study -- Compare What Was Expected with Result	Nine Separate Studies, One on Sociological Aspects	Mailed Ques. Indep't Interviews
12	1970	Ag., Soc. and Anthr., Soil Conserv.	Watershed Project (Puerto Rico). Flood Control	Ascertain Attitudes Concerning the Project -- Aid Program Development	Survey Research	Personal Observation, Secondary Sources, Ques.
13	1972	Anthr.	Reservoir (Kentucky)-Flood Control and Recreation	Define Impacts of New Patterns of Land Buying Related to Reservoir	Holistic approach -- Cognitive Anthropology -- Assess Perceptions	Participant Observation, Field Interview Some Secondary Sources

TABLE 3-1: SUMMARY OF INDIVIDUAL STUDY CHARACTERISTICS
(Continued)

STUDY #	DATE	AUTHORS' BACKGROUND	TYPE PROJECT - LOCATION/PURPOSES	OBJECTIVES OF RESEARCH	GENERAL METHOD	DATA SOURCES
14	1973	Anthr.	Three Reservoirs (Ky.) Floor Control, Recreation, Water Supply	Analyze the Impact of Reservoir on Local Government Functions and Perceptions of Efficacy	Compare Impacts in Three Areas Using Cultural Perspective	Participant Observer, Brief Open-ended Questionnaire
15	1974	Anthr.	Two Reservoirs (Ky) Floor Control, Recreation, Water Quality	Test the Utility of Anth. Method to Explain Social Impacts. Examine Importance of Impact	Comparison of Two Areas Using Ethnographic Analysis	Participant Observer, Key Informants, Open-ended Ques.
16	1974	Ag. Econ., Soc.	Expansion of a Sewage Plant (Ill.). Pollution Control	Examine Factors Leading to Dissemination and Distortion of Information about Water Resource	Look at and Test Two Research Hypotheses Using a Site Specific Cast Study	Self-administered Ques.- Mostly close-ended
17	1972	Econ.	Reservoir (Tenn.) Recreation, Power Generation	Estimate Local Economic Impact of Recreation, Compare to Impact of Water-Based Industry	Estimate Primary and Secondary Impacts (Multiplier Effect). Compare for Reservoir and Water-Based Industry	Secondary Sources-- TVA Surveys and Estimates, Federal Government Path.
18	1973		Dams, Canals, and Irrigation Projects throughout Wyoming	Evaluate Social Well-Being Change Associated with Water Resource Development	Use All Social Well-being Proxies in Principles and Standards. Compare Counties with and without Water Resource Projects	Secondary Sources -- Census and Bu.Rec. Primarily
19	1972	Geog. (2)	A Reservoir (Okla.)	Look at Impact of Public Expenditures on Recreation Behavior -- Help Estimate Recreation Benefits	Field Research	Random Sample Interviews -- Open and Close-ended Ques.
20	1967		Three Reservoirs (Ky. and Ohio) -- Flood Control and Recreation	Examine Extra Economic Value Placed on Land by Landowners. Help Planners Estimate "Private" Value of Land	Develop a Theory Relating Attitudes and Costs of Land Test on These Three Reservoirs	Postcard Ques.
21	1970	Anthr. (2)	Two Reservoirs (Oregon) -- Flood Control, Irrigation, Power, Recreation	Assess the Impact of Two Dams on the Behavioral and Attitudinal Patterns of the Local Area	Historical Perspective Using Standard Historical Techniques and Some Anthropological Techniques	Participant Observers, General Ques. Compile Life Histories. Interviews
22	1973	Econ., Op. An.	Three Reservoirs (Tex.) Water Use, Recreation, Flood Control, Power	Develop Techniques for Measuring Market and Non-Market Benefits and Costs of Water Resources Systems	Form Techniques, and Test in Framework of a Conceptual Model Linking Economic, Environmental and Social Systems, Looking to Establish Basis for Trade-offs	Lack of Secondary Data -- Use -- A Survey of Random sample of Local Residents on Nature of Impacts
23	1975	Rural Soc.	One Reservoir (Pa.)	Focus on Community Organization Response to Dam-related Social Changes	Use Community Leader's Perceptions as Measures of Impact. Look for Variables Associated with Perceptual Accuracy	Focused Interviews -- Open Format Using Open-ended Ques.
24	1974	Pol. Sci.	One Reservoir (Vt.) -- Flood Control and Recreation	Learn Where Social Impacts Occur and What They Consist of. Develop Criteria to Evaluate Flood Management Plans	Exploratory -- Using Extreme Case Studies to Flesh Out the Full Range of Impacts	Secondary Sources -- Newspaper Accounts, Published Interviews, Other Existing Documents
25	1972		Reservoir (Mass.) for Diversion of Water between Basins	Develop Methods to Better Enable Planners to Deal with Socio-Political Issues in Water Resource Management	Analytical Framework -- Determine Circumstantial Events and Deterministic Trends. Use Field Research, Direct Contact with Issues to Determine.	Secondary Sources -- Newspapers, Legislative Hearings, etc. Interviews. Participant Observers
26	1974	Ag. Econ.	Reservoir (Oregon) -- Flood Control	Develop a Methodology to Value Intangible Benefits using Intensity of Satisfaction as a Guide. Also Ascertain Trade-off Values for Five Environmental Features	Priority Evaluation Technique Used to Test Allocation Decisions When Faced with Limited Resources and Competing Alternatives	Random Sample Survey Using Close- and Open-End Ques. Some pictorial Representations

TABLE 3-1: SUMMARY OF INDIVIDUAL STUDY CHARACTERISTICS
(Continued)

STUDY #	DATE	AUTHORS' BACKGROUND	TYPE PROJECT - LOCATION/PURPOSES	OBJECTIVES OF RESEARCH	GENERAL METHOD	DATA SOURCES
27	1975	Anthr.	Reservoir (Miss.) -- Flood Control, Water Quality, Recreation, Navigation	Illustrate Complexity of Water Resource Development Involving Indian Tribes	Documentation of a Single Case Study	Secondary Sources, Personal Observation
28	1972	Pol. Sci.	Canal (Indiana) -- Flood Control, Navigation, Recreation	Evaluate Impact of Legal, Administrative and Political Factors on Water Policy, Assess Capability of Existing Institutions to Implement Systems Approach	Exploratory -- Describe and Assess Appplication of Analytical Techniques	Review the Public Record -- Personal Observation -- Open-ended Interviews
29	1971		Water Resource Projects in Oregon, Georgia, Pennsylvania and Minnesota	Give a Realistic Assessment of the Role Water Development Plays in Creating New Cities, Spurring Growth and Improving Rural Quality of Life	Survey Research and Empirical Analysis	Secondary Sources -- Census Data. Selected Interviews with Officials in Urban and Regional Development
30	1975	Soc. and Anthr.	Reservoir (Texas) -- Flood Control, Water Supply, Water Quality, Recreation	Develop Systematic Procedures for Assessing Environmental Impacts of a Public Project from a Sociological Perspective	Microscopic Analysis of the Interaction of a Community Field and an Action Process and Their Impacts on Each Other	Open-ended Ques. to Leaders. Content analysis of Newspapers, Official Records, Delphi of Experts, Interviews
31	1970	Anthr.	Reservoir (Kentucky) -- Flood Control	Provide Baseline Data on a Community. Also Discuss Incipient Impact of Project	Ethnographic Analysis	Participant Observation. Review of Secondary Sources. Informal Discussions with Residents
32	1973	Anthr.	Reservoir (Kentucky) Flood Control and Recreation	Discuss Impact of a Proposed Reservoir on a Local School System. Make Recommendations to Avert Possible Conflict	Anthropological Analysis -- Culture as an Organized Whole Focus on Institutions and Linkages to Community	Existing Quantitative Data on School System. Informal Interview with Officials. Participant Observation
33	1971		Four Reservoirs (California) -- Water Supply, Recreation	Identify Major Incremental Socio-Economic Costs and Benefits Related to Water Quality and Supply and Recreation in Reservoir Planning	Develop a Cost/Benefit Model Pertinent to Water Supply/Recreational Decisions. Incorporate Social Factor Weighting in the Model	Two Surveys - Closed Ques. to Local Officials. Close Quest.to State Officials throughout Country
34	1972	Soc.	Reservoir (Montana)-- Flood Control, Recreation	Establish Foundations for Later Studies of Local Community vs. Outside Control, Stability vs. Non-Stability	Baseline Data Generation, Survey Research	Content Analysis of Newspapers, Survey, Interviews with People Being Relocated
35	1969	Soc.	Reservoir (Kansas) -- Flood Control	Study Relationship between Attitude Change and Behavioral Change in a Forced Resettlement Situation	Apply Theories of Cognitive Dissonance Use a "Non-Experimental" Case Study to Test Theories	Secondary Sources -- Letters, Testimony, Newspaper Articles. Survey of People Resettled
36	1972	Econ.	Four Reservoirs (Montana)	Provide Guidelines for Anticipating Impacts of Water Resource Construction on Local Gov't	Case Study Approach	Secondary Sources.Interviews with Local Officials
37	1974		Nuclear Power Plant (N.J.) -- Power Generation	Analyze Impact of Thermal Pollution on Inhabitants and Visitors. Look at Economic Impact and Recreation Impact	Field Investigation -- Survey Research	Random Sample Survey of Residents. In-depth Interviews with Local Officials
38	1972		Two Reservoirs (Kansas)	Uncover Variables Relevant to Policy Formation Relating to Residential Development and Water Quality	Systems Approach. Identify Constraints on Policymaking Process. Survey Research	Random Sample Survey-- Mailed Quest. and Interviews

Disciplines -- The disciplinary background of the researchers involved in social impacts of water resource developments has a great deal to do with what areas are studied and how they are approached. Figure 3b gives the distribution of disciplines mentioned in the studies reviewed. The graph does not represent the actual number of sociologists, geographers, or economists who have worked on this type of research; the data was too incomplete to provide that information. Instead it represents disciplines employed in a research project. For instance, though study No. 3 has three sociologists, an economist, and a political scientist, on the graph each discipline gets only one mention. In a case where a researcher has too disciplines (e.g., sociology and anthropology), each discipline gets a mention.

The distribution of disciplines represented by Figure 3b is highly skewed toward sociologists and anthropologists (including agricultural economists). One should be aware, however, that this inequity is primarily the result of the work of two men: Wade Andrews and Phillip Drucker. The five disciplines included in the other category are recreation and parks, soil conservation, agriculture, operations analysis, and hydrology. Six of the studies make no mention of the disciplines of the researchers; several of these are studies done by private contracting firms.

Objectives/Methods/Data Sources -- The variety and general tone of the objectives and methods of the studies reflects the academic as well as sociological/anthropological bias of much of the research done on social impacts. Many of the objectives cited involve developing models, testing hypotheses, and exploring relationships among variables. This is expected, given the relatively unchartered nature of the field. There is some interest in helping the planner evaluate what the impacts of a project action will be, but that mainly comes as a natural result of increasing the general knowledge about the social impacts of water resource developments. Very few studies have as their main objective assisting the planner in making decisions about project actions.

The methods employed by the researchers follow, naturally, the pattern of objectives. Many call their research exploratory. Several try to define variables, test hypotheses, or develop models. A few admit to using their case study as a purely exploratory, inductive exercise. The disciplinary biases of the researchers are also evident in the methods employed. Many of the studies use survey research common to sociological and political science research. The anthropologists stand out with their emphasis on culture systems, ethnographic analysis, and holistic approaches to the problem. Very few discuss the character and special problems of post-audit analysis of large public works projects.

Figure 3a: DISTRIBUTION OF STUDIES BY YEAR

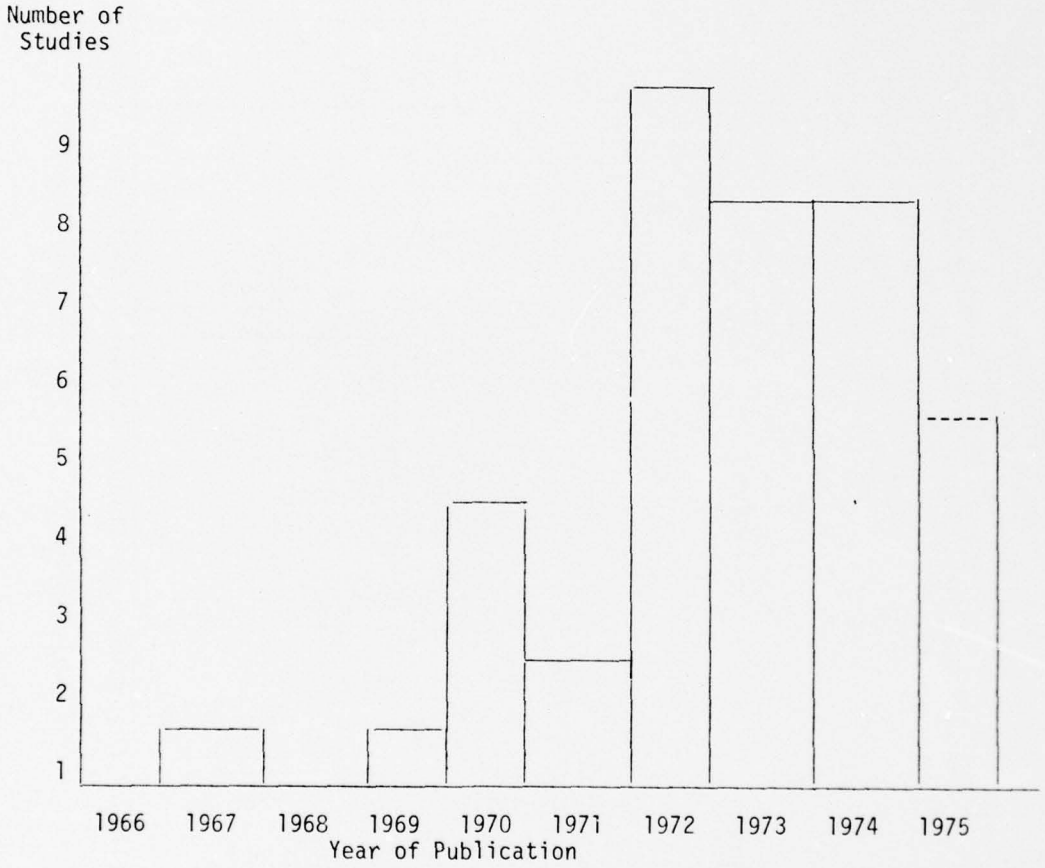
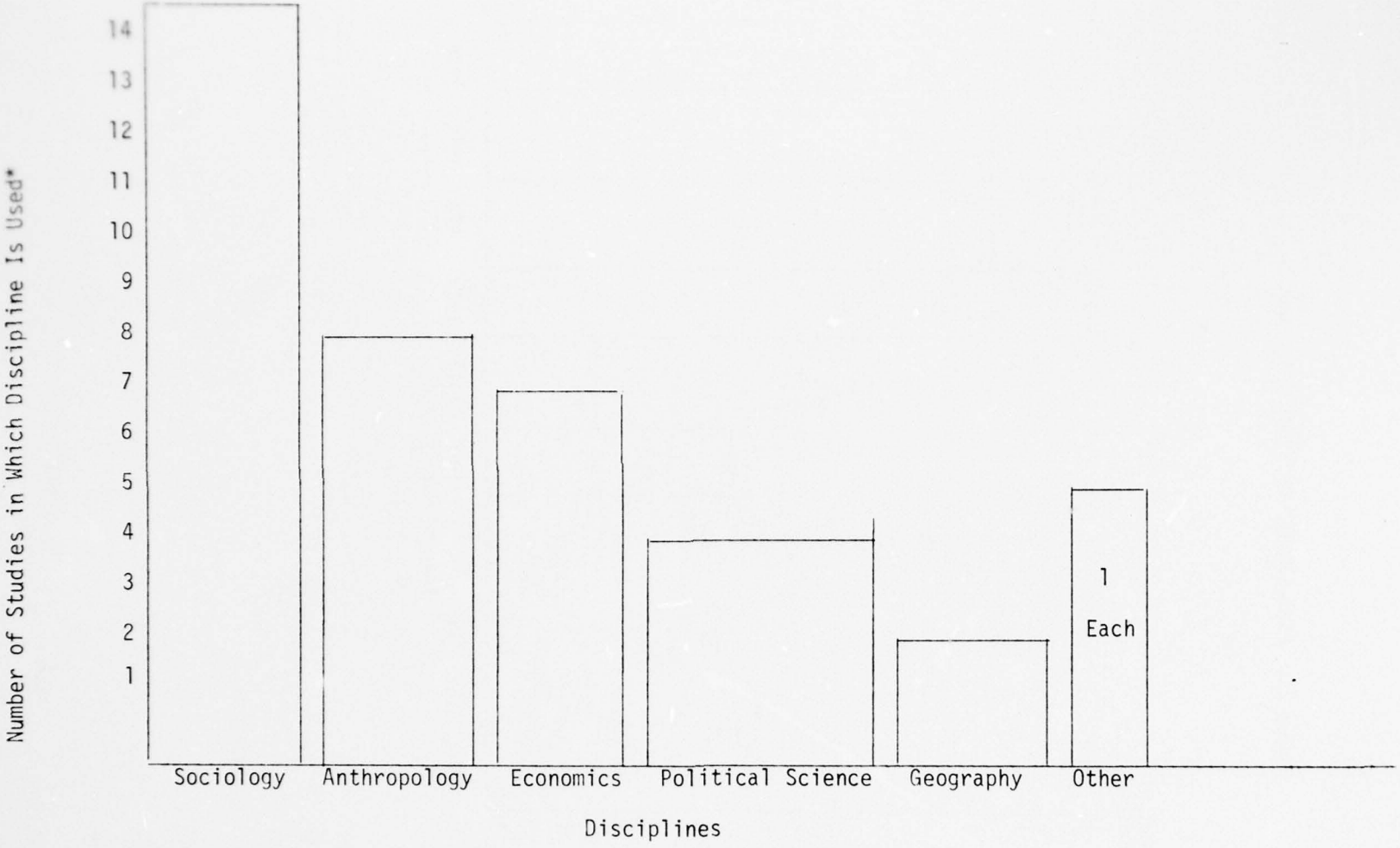


Figure 3b: DISTRIBUTION OF DISCIPLINES BY STUDY



*Six studies -- no mention of disciplines.

The data sources used in the social impact research on water resource development projects are common across disciplinary boundaries. Almost every study uses some type of survey. The sociologists tend to use more random sample surveys of residents though they put some weight on interviews with local officials and opinion leaders. The anthropologists are strong on informal interviews using an open-ended format. This also leads them to use the participant observer technique quite often. The political scientists use surveys and participant observers but seem to rely most heavily on analysis of secondary sources as do the economists. Sociologists and anthropologists do not ignore these secondary sources; they merely put less emphasis on them than do political scientists and economists.

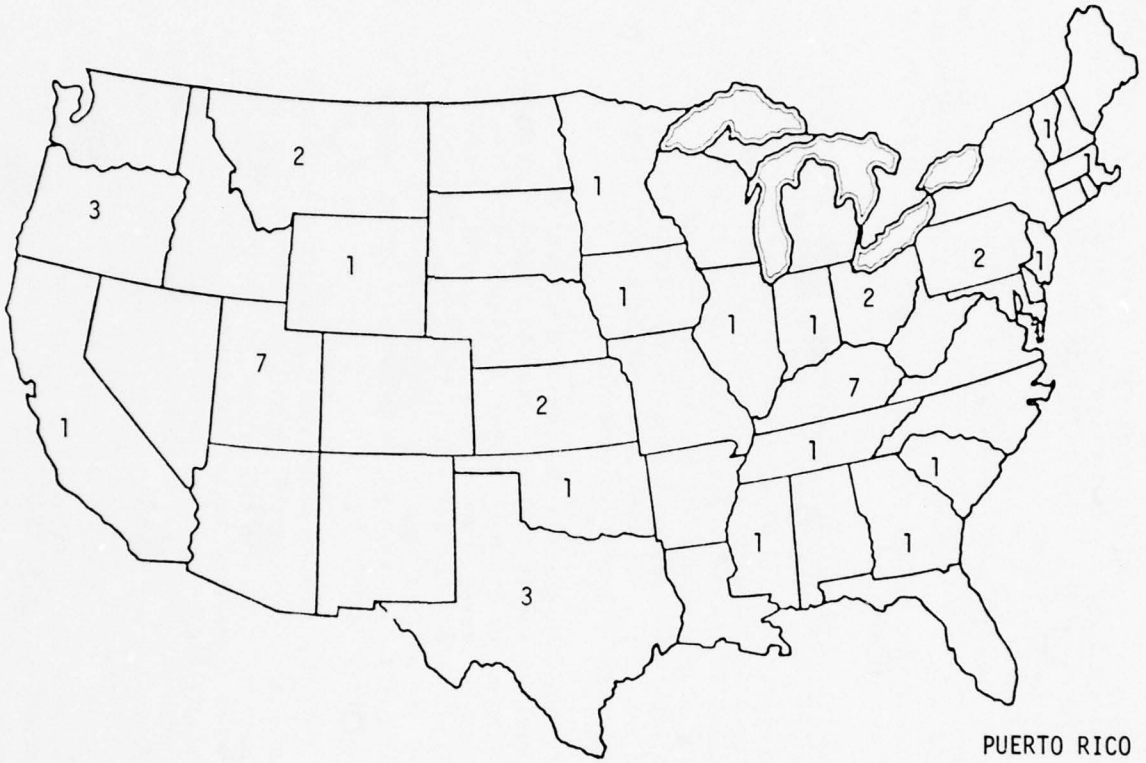
Projects -- Location, Type, Purpose -- The overwhelming majority of projects whose social impacts have been researched are reservoirs. Of the 38 studies, 26 discuss the impacts of over 50 reservoirs. The only other projects which have received attention are canals (three studies), channelization and stream lining (three studies), a sewage plant, a power plant, an irrigation project, a chemical plant, and a watershed project. Two studies failed to make distinctions among the types of projects involved; they were looking at the impacts of water resources development projects in general.

Specific data on the projects discussed in the research on social impacts is sorely lacking. Most of the studies mention the name of the reservoir and its approximate location. Very few give specific information on storage capacity, dam type, cost, estimated or actual construction period, or surface acreage of the pool. Admittedly some of the difficulty lies in the fact that many of the studies are discussing proposed reservoirs; yet even when post-construction phase impacts are discussed, few details are given.

Figure 3c represents the geographic distribution of the projects discussed. The numbers represent not the number of projects, but the number of studies which mention projects in that state; again the data was too fragmented to get an accurate picture of the distribution of specific projects. The greatest concentrations of projects studies are in Utah and Kentucky, reflecting the active work of Wade Andrews and Phillip Drucker in the area of social impacts. Other than these two anomalies, the projects are fairly evenly distributed throughout the country. New England, the Deep South, the Great Plains, and the Southwest have not received the same amount of attention as the Far West, Middle West, and Middle Atlantic regions.

The purposes of the projects mentioned in the individual study reviews are summarized in Figure 3d. Recreation and flood control were the major purposes cited in the studies. They totaled more than the next five categories combined. The preponderance of these purposes, reflecting the overwhelming emphasis on reservoirs, affects the types of impacts that have been identified. For instance, the lack of work

Figure 3c: GEOGRAPHICAL DISTRIBUTION OF SOCIAL IMPACT OF WATER RESOURCE DEVELOPMENT PROJECTS RESEARCH



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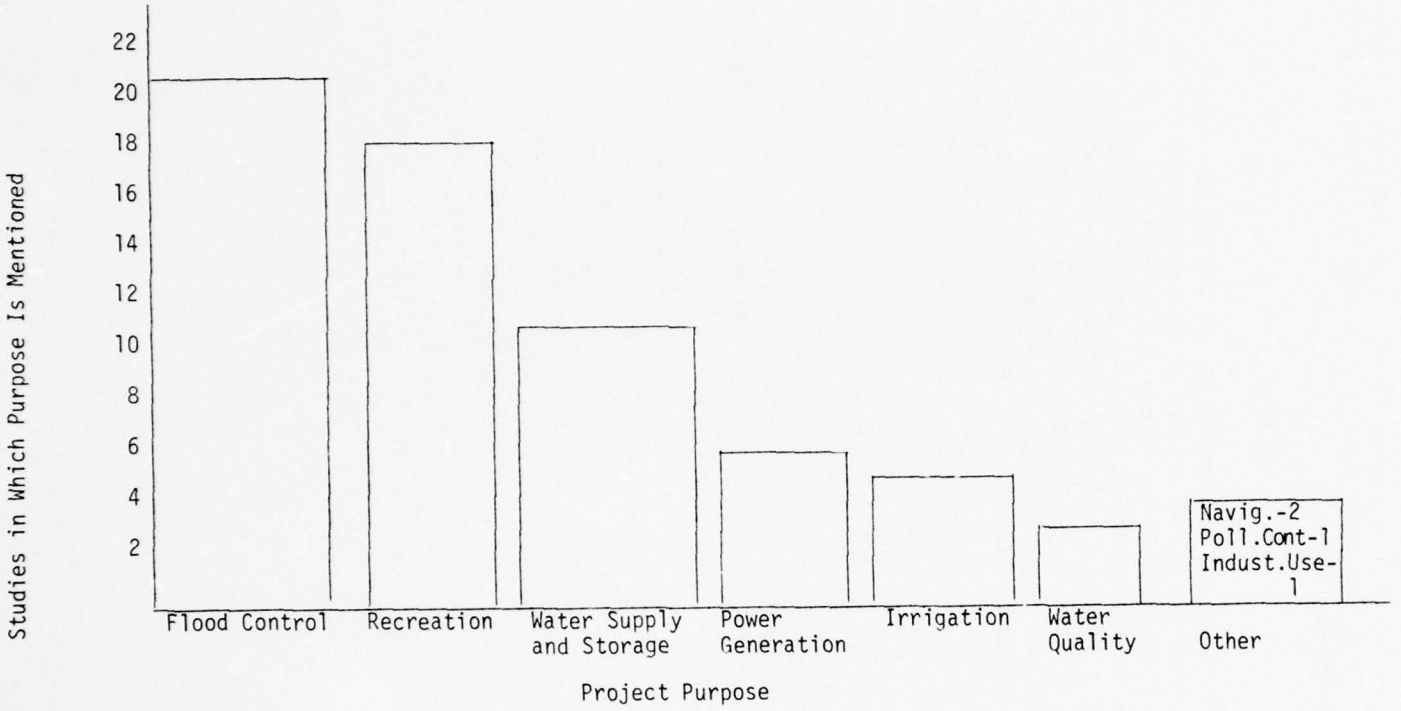
Numbers signify number of studies discussing projects in that State.

Figure 3d: PROJECT PURPOSES MENTIONED IN STUDIES*



*Six studies mention no purposes.

on navigation projects means that those social impacts particular to those projects such as redistribution of income or health effects are relatively untouched.

SUMMARY

The shortcomings of the research on the social impacts of water resources developments cited in the previous section are the product of the state of the research. Given the increasing involvement of social impacts in the planning process, it is reasonable to expect the number of social impact studies to increase in the near future. Part of this increase will be the result of research already begun in response to new planning requirements. However, more important in terms of post-audit analyses, will be a growing interest in providing some empirical basis for projecting social impacts. At the present the research is near the take-off point. Each study has until now started virtually from ground zero; many researchers have complained of the lack of previous research. One effect of this lack of research has been a paucity of data collection on social impacts during the phases of project development. Now data is being collected on these impacts and research is beginning to be done using this data. As more pertinent data becomes available and given continued interest of planners in social impacts, the number of post-audit studies of social impacts will increase in quality and quantity.

CHAPTER 4: IMPACT SUMMARY

The ultimate purpose of this review is to aid planners in identifying social impacts that could derive from project actions. The impact summary is the most important part of the review in terms of fulfilling that purpose; it provides the key to unlock the store of information contained in the individual study summaries. The summary lists the specific impacts, categorizes them, and summarizes their distribution; further information on each impact and the related projects can be found in the individual study summaries.

Each impact is categorized by two dimensions -- Project Phase and Impact Type. Project Phase refers to the time during a project's lifetime at which the impact takes place. In this review a simple pre-construction, construction, and post-construction typology is used; the lack of specificity of impact timing in most reports made it necessary to use such a general classification. Also, the types of impacts found in these different phases have commonalities among themselves and distinct differences from impacts in other phases. Impacts prior to construction of a reservoir differ markedly from the impacts of operating that reservoir.

Division of impacts into impact types is more arbitrary than dividing them into project phases. There is no established set of social impact categories which always apply to water resource projects; there has not been enough research on the actual social impacts of projects for such a set of categories to emerge. Using the Principles and Standards social well-being account, Corps regulation ER 1105-20-240 impact categories and observed impact distributions, four categories of social impacts were chosen. These do not cover the universe of social impacts of a water resource development project; they reflect the current state of the research. The four categories are:

-- Distribution

-- Opportunity

-- Local Service Delivery

-- Community Cohesion

Distribution impacts refer to impacts generally classified as demographic. Shifting residential patterns, population mobility and residential density are distribution impacts, as are relocation impacts and their accompanying impacts on local housing. In addition to regular demographic impacts, this category includes impacts relating to real income distribution and the general distribution of the costs and benefits of a project action.

Opportunity impacts are those impacts involving a change in a community member's ability to enjoy a variety of opportunities. They include changes in education and cultural opportunities. Changes in social patterns such as visiting friends and relatives are considered changes in cultural opportunities, as is the building of a theatre in a local town. Recreation opportunities, especially the provision of aesthetically valuable areas, are listed under this category. Finally, general effects on the local level of economic opportunity are included in opportunity impacts.

Local Service Delivery impacts include a range of impacts often considered economic or health-related. Provision of safety from floods and increase in health care resulting from water resource developments are considered impacts on local service delivery. The primary focus of local service delivery impacts is on the local government -- changes in its tax base, its expenditures, its structure, its services, and its effectiveness. Effects on the delivery capability of local non-governmental organizations are also included in this category.

Community Cohesion impacts are concerned mainly with perceptions of change and the reactions to that change. Conflict among residents of an area and among community groups as a result of a water resource development projects are impacts on community cohesion. Opposition or support for the project is related to conflict or the lack thereof and is therefore considered a community cohesion impact. Related to opposition and support are impacts of a project on people's awareness of its existence and the accuracy of that awareness. Finally the contribution of a project to the economic/social stability of an area or its generation of anxiety over potential unwanted change is considered an impact on community cohesion.

Table 4-1 lists all the impacts found in the individual study reviews. They are ordered by study identification number and are classified by impact type and project phase. The distribution of these impacts by project phase and impact type is represented by Figure 4a. Each cell of the figure represents a particular project phase/impact type combination (for example, construction/community cohesion). In each cell are study identification numbers followed by numbers in parentheses signifying the number of impacts in that study which pertain to that particular project phase/impact type combination. In the lower righthand corner of each cell are the total number of impacts found relating to that combination; these numbers are added horizontally and vertically summing to a total of 104.

Both Table 4-1 and Figure 4a are intended to act as guides to the more extensive information found in the individual summaries. For instance, you are interested in the impacts of construction phase actions on community cohesion. Looking at Figure 4a, you find

TABLE 4-1 : SUMMARY LIST OF IMPACTS

Key: Pre - Pre-Construction Phase

Post - Post-Construction Phase

Const. - Construction Phase

D - Distribution Impacts

O - Opportunity Impacts

LS - Local Service Delivery Impacts

CC - Community Cohesion Impacts

STUDY #	PHASE	IMPACT DESCRIPTION	TYPE
1	Pre	Interagency Conflict	CC
	"	Interest Groups Formed to Block Plant	CC
	"	Interest Groups Formed to Support Plant	CC
	"	Cancellation of Intent to Build	CC
2	Pre	Differing Levels of Awareness	CC
	"	Low Level of Accuracy	CC
	"	Farmers Most Interested	CC
	"	Inequities Perceived	CC
3	Post	Reduction of Anxiety Over Flooding	LS
	"	Enchantment of Aesthetic Value	O
	"	Increased Economic/Social Stability	CC
	"	Enchantment of Leisure Activities	O
	"	Increased Juvenile Delinquency	CC

STUDY #	PHASE	IMPACT DESCRIPTION	TYPE
4	Post	Different Levels of Opposition to Projects	CC
5	Pre	Social Conflict Over Aesthetic	CC
6	Pre	Differing Institutional Responses to Public Pressure	LS
	"	Low Awareness of Pertinent Agencies	CC
	"	Differing Awareness of Specific Plans	CC
	"	Low Level of Political Activity	CC
7	Post	Community Power Structure Elaboration	LS
	"	Conflict between new & old interest groups	CC
	"	Decrease in Agricultural Land	O
	"	Decrease in Number of Farmers	CC
	"	Creation of Bear Lake Regional Committee	LS
8	Post	Reduction of Economic Anxiety	CC
	"	Beauty of Area Enhanced	O
	"	Administrative Problems	LS
	"	Limited Law Enforcement Difficulties	LS
9	Pre	Lack of knowledge about proposed Reservoirs	CC
	"	Opposition to Projects	CC
	"	Opposition to Corps	CC

STUDY #	PHASE	IMPACT DESCRIPTION	TYPE
10	Pre	Growing Opposition as Project Nears	CC
	Post	Financial Situation Worsened	D
	"	Social Pattern Changed	O
11	Pre	Favorable Reaction to the Dam	CC
	Post	Add to Economic Growth	O
	"	Increase Community Safety	LS
	"	Increase General Social Well-Being	D
12	Pre	High Awareness - Low Activity	CC
	"	Differing Levels of Accuracy	CC
	"	High Degree of Approval	CC
	"	Little Disagreement over Distribution of Benefits	D
13	Pre	Change Perceptions of Land Value	D
	"	Fear of Out Migration	D
	"	Fear of Migration & Transients	D
	"	Anxiety & Disorganization of Social Structure	CC
14	Post	Fear of a loss of Tax Revenue	LS
	"	Fear of loss of Tax Revenue Unfounded	LS
	"	Increase Burden on Local Roads	LS
	"	Greater Burden on Law Enforcement Agencies	LS

STUDY #	PHASE	IMPACT DESCRIPTION	TYPE
15	Pre	Intra-Community Animosities Develop	CC
	Post	Social Disorganization is not Perceived as Significant as Economic Change	CC
16	Pre	Failure of Public Concern to Crystalize	CC
17	Post	Contribution of Recreation to Local Economy Unimportant	O
	"	Impact of Water-based Industry More Important than Recreation	O
18	Post	Altered Distribution of of Income	D
	"	Increased Economic Stability	CC
19	Post	Recreational Participation Affected	O
	"	Loss of Hunting and Fishing Streams	O
20	Pre	More a Project Affects Landowners - More Intense the Reaction	CC
	"	The More Knowledgeable - the More Favorable	CC
21	Post	Increased Legalism and Formalism in Community Government	LS
	"	New Town Image	CC
	"	Purchase of Recreation Equipment	O
	"	Changing Town Social Structure	CC
	Const	Rapid Growth and Decline of Community Services	LS

STUDY #	PHASE	IMPACT DESCRIPTION	TYPE
22	Post	Enhance Beauty of Area	O
	"	Increase in Job Opportunities	O
23	Post	Direction but not Magnitude of change Correctly Perceived	CC
	"	Lack of Community Organizational Response to Reservoir-Induced Changes	LS
24	Pre	Anxiety Resulting from Delay and Uncertainty	CC
	Const	General Animosity towards the Corps	CC
	Post	Increased Law Enforcement Problems	LS
	"	Loss of Town Development Options	LS
25	Pre	Formation of Citizens Groups in Opposition to Project	CC
	"	Blocking of Project	CC
26	Pre	Widely varying perceptions of the Value of Project	CC
27	Pre	Lack of Involvement of an Indian Tribe in Reservoir Planning	CC
28	Pre	Opposition to Projects Based on Future Demand to be Created by Project	CC
29	Post	Water Resource Investments Do Not Affect Population Growth	D
30	Pre	Favorable Public Reaction	CC
	"	Cause Community Conflict	CC
	"	Increase in Residential Mobility	D

STUDY #	PHASE	IMPACT DESCRIPTION	TYPE
31	Pre	Economic Benefits Foreseen	O
	"	Limited Expectation of Flood Control Benefits	LS
	"	Anxiety over Relocation	CC
	"	Fear of Undesirable Changes	CC
	"	Perceived Necessity for County Initiatives	LS
32	Pre	Anxiety over Impacts of Construction on School District	LS
33	Post	Perception of Benefits Related to Reservoir Type	O
	"	Reservoir Recreation Does Not Create Major Problems	
	"	Different Activities Perceived as Having Different Effects on W.Q.	O
34	Pre	Apathy and Alienation Among Local Residents	CC
	Const	Lack of Conflict over Dam Construction	CC
35	Post	Attitudes about Reservoir Change after Resettlement	D
	"	Opposition Attitudes Supported by High Levels of Alienation	CC
36	Const	Local Government Services Not Affected	LS
37	Post	Differing Perceptions of Direction of General Impact	CC
	"	Unequal Distribution of Costs and Benefits	D
	"	Feeling of Powerlessness in Local Government	LS

STUDY #	PHASE	IMPACT DESCRIPTION	TYPE
38	Post	Concern for Water Quality Created but Not Activity	CC
	"	Local Residents Desire to Solve Own Problems	CC
	"	Low Interest in Water Quality by Local Governments	LS
	"	Low Interest in Water Quality by Large Developers	LS

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Figure 4a: DISTRIBUTION OF IMPACTS BY TYPE AND PROJECT PHASE

Type of Impact / Project Phase	Distribution Population Density Population Mobility Housing/Relocation Income/Distribution Costs/Benefits	Opportunity Educational Cultural Recreational Aesthetic Economic	Local Service Delivery Safety Health Local Gov't Revenues Local Expenditures Law Enforcement Local Gov't Structure	Community Cohesion Conflict Opposition/Support for Project Awareness of Project Unwanted Changes Anxiety/Stability	Total
Pre-Construction	2(1), 12(1), 13(3), 30(1)* 6	31(1) 1	6(1), 14(1), 31(2), 32(1) 5	1(4), 2(3), 4(1), 5(1) 5(3), 9(3), 10(1), 11(1), 12(3), 13(1), 15(1), 16(1), 20(2), 24(2), 25(2), 26(1), 27(1), 28(1), 30(2), 31(2), 34(1) 38	50
Construction			21(1), 36(1) 2	34(1) 1	3
Post-Construction	10(1), 11(1), 18(1) 29(1), 33(1), 35(1) 37(1) 7	3(2), 7)1), 8(1), 10(1), 11(1), 17(2), 19(2), 21(1), 22(2), 33(2) 15	3(1), 7(2), 8(2), 11(1), 14(3), 21(1), 23(1), 24(2), 37(1), 38(2) 15	3(2), 7(2), 8(1), 15(1) 18(1), 21(2), 23(1), 35(1), 37(1), 38(2) 14	51
Total	13	16	22	53	104 104

* 30(1) means Study No. 30 has one impact in this category. See Table 4-1 for description of the impact.

study number 34 has an impact in that area. Turning to Table 4-1, you locate the impact description "Lack of Conflict over Dam Construction." If you want to know how this was measured, what type of construction is being referred to, and why there was no conflict, go to the summary of Study 34 in Chapter 3. There you will find (a) the project is a reservoir constructed in Montana; (b) the impact was measured through informal interviews; and (c) people see the dam construction as a passing phase which will leave a reservoir and little else.

DISTRIBUTIONS

Besides serving as guides to more in-depth analysis of specific impacts, Table 4-1 and Figure 4a indicate quite a bit about the state of research done on the social impacts of water resources development projects. In terms of project phases, pre-construction and post-construction get almost equal treatment, while construction is virtually ignored. One reason for this imbalance is the difference in time scales; both pre-construction and post-construction periods tend to be substantially longer than construction periods. This makes it much more difficult for the researcher to capture the specific impacts of that unusual period. However, the unusual nature of the period should make it more amenable to impact analysis. This clearly is an area in need of more research.

Impacts break down more evenly in terms of impact types. The harder, more economic categories of distribution and opportunity, however, do not get as much attention as the more socially-oriented Local Service Delivery and Community Cohesion impacts. This is especially true of the pre-construction phase impacts. This pattern of distribution reflects the strong disciplinary bias of the studies. Most of the studies reviewed in this report were done by sociologists and anthropologists; their interests naturally focused on areas of community structure, functioning, conflict, and cohesion. The more economic issues such as income distribution and recreation opportunities "fell through the cracks" as an effect of disciplinary division of labor.

The division of labor becomes even more apparent when one looks at the distribution of impacts within individual studies. A few studies have impacts spreading over the range of impact types (3, 10, 11). Most, however, concentrate on one or two impact types. The division is particularly marked in terms of project phases; very few studies discuss impacts in more than one project phase. These patterns lead one to conclude that little good, holistic (multi-phase/multi-impact) work has been done on the social impacts of water resources development projects.

Turning to the specific impacts found in the more popular combinations (pre-construction/community cohesion; post-construction/

opportunity; pcst-construction/local service delivery; and post-construction/community cohesion), one finds an even further narrowing of research interest. In pre-construction/ community cohesion, the most popular combination, most of the impacts deal with awareness of a project, accuracy of awareness, and opposition to a project. These are the most indirect and therefore most tenuous indicators of community cohesion. Much less analysis is given to intra-community conflict which much more closely relates to the concept of community cohesion.

In post-construction/opportunity the emphasis is very strong on recreation and related aesthetic opportunities provided by water resources development projects. Economic opportunities are the only ones which receive any other mention. Cultural and especially educational opportunities are neglected.

Post-construction/local service delivery impacts are more varied than those in the opportunity category. They cover local roads, tax revenues, service delivery in general, law enforcement, changes in local government institutions, and the provision of health and safety. The post-construction/community cohesion impacts are also fairly diverse, covering reduction of anxiety, changing social structures, increase in stability, new town image, perceptions of change, and degree of political activity.

The distribution of the 104 impacts found in the 38 studies which qualified as post-audit social impact analyses of water resources development projects illustrates the relatively uncharted nature of the field. There are large gaps of coverage among and within impact categories and project phases. The neglect of construction phase and distribution impacts is particularly striking. Equally alarming is the overwhelming interest within the pre-construction/community cohesion section in the most indirect measures of cohesion. One means to cover these gaps is to recognize the tendency to reinforce them by following the well-trodden path of past research and to design new research to counter this tendency. The questions presented in the following chapter are intended to aid in broadening the focus of work on the social impacts of water resources development projects.

CHAPTER 5: RESEARCH QUESTIONS

The following questions are a preliminary attempt to outline the types of concerns which should guide future work on social impacts of water resources development projects. They are divided into two sections: questions concerning the general conduct of research on social impacts, and questions concerning specific impacts and project phases.

General:

1) What is the relationship of project type to the type and distribution of impacts found?

2) Are there threshold effects relating to impact incidence that relate to the size of a project?

3) How do the avowed project purposes affect the type of impacts that occur: Is the effect of the purposes greater in the pre-construction or post-construction phase?

4) What is the process whereby impacts transcend the phase of their initiation? How do they change with the change in project phase? Does the residual of an impact in one phase affect the nature of impacts in later phases?

5) What types of impacts are most likely to exist across project phases?

6) What techniques are most suitable to identifying impacts across the range of categories? Could the tracing and scanning methods outlined in the technology assessment literature be applied to this type of research?

7) What would be the optimal structure for a comprehensive study of the social impacts of a water resources development project? What funding level would be necessary?

8) How would one study the impacts of non-implementation of a project? Would projected changes resulting from a project be the only basis for evaluating impacts of non-implementation?

9) What categories of impacts could be added to distribution, opportunity, local service delivery, and community cohesion?

Specific:

1) What is the relationship between expressed attitude and action in opposition to a project in the pre-construction period?

2) To what extent does opposition to a project affect community cohesion? Is there a threshold effect?

3) What effect do different acquisition policies have on support or opposition to project construction?

4) What factors are most closely related to favorable attitudes towards projects in the pre-construction period?

5) What is the timing of impacts of construction of a project on the local government's services?

6) How do different project construction processes differ in their impacts on school systems, law enforcement, health care delivery, or local tax revenue?

7) What are the common constraints to community, specifically local government, response to problems created by reservoir construction?

8) What happens during the construction and post-construction periods to interest groups formed in opposition to the project? Do they disperse, find new causes, or continue in opposition?

9) How does a project become accepted by the community? What residual effects does this acceptance process have? What factors facilitate the acceptance?

10) What is the local response to rising costs, economic and social, of maintaining a project? How does the overall cost/benefit analysis of the project shift over time?

11) How do actual inequities created by projects relate to perceived inequities? What are the intervening variables that might create perceptual distortion?

12) How do people react to the changes brought about by the project? Do they maintain their pre-construction attitudes or does the long time it takes impacts to occur dissipate concern?

13) Is there a significant difference between age groups and income groups in their acceptance of a project?

14) What criteria can distinguish between the developmental and destructive aspects of a project? or are these evaluations solely the produce of the evaluators' perspective?

CHAPTER 6: SUMMARY

A. Utility of the Study

The purpose of this analytical review of research reports on social impacts of water resources development projects is to help water resources planners identify and evaluate the impacts of project actions. The review provides this assistance by (a) summarizing the results and methods of existing research on social impacts, (b) analyzing the nature of the research through identification of implicit patterns and resultant gaps in coverage, and (c) suggesting questions for future research to address.

The source of the review's utility to the planner lies in its application of the case survey method to case studies of the social impacts of water resources development projects. The case survey method, by applying a pre-designed format focusing on specific study results, is particularly suited to areas of research where no common research paradigm exists; social impacts of water resources development projects is such a field. The real key to the review's utility is its concentration on case studies. By using only reports discussing social impacts of specific projects that have occurred or are occurring the review provides the planner with a substantial foundation for evaluating impacts, a more substantial foundation than a review of prospective, methodological, or attitudinal studies would provide.

The structure of the review follows three levels of summary. The first level is the individual study summaries of Chapter 2. These summaries contain information on the authors, funding groups, objectives, methodology, and impacts of each report reviewed. This information is the most specific in the review and is therefore the most valuable to a detailed evaluation.

The next summary level is the summary of study characteristics (Chapter 3) and the impact summary (Chapter 4). Tables 3-1 and 4-1 and Figure 4a present brief synopses of the information found in the individual study reviews. Their purpose is to allow the planner to key into information in the study summaries from a variety of concerns: methodology, objectives, type of project considered, impact category, and project phase.

The third and most general summary level is the analysis of the state of the research found in the distributions sections of Chapters 3 and 4. In these sections, the patterns of incidence relating to each study characteristic, impact category, and project phase are presented. Figures 3a, 3b, 3c, 3d, and 4a all represent various distributions relating to the field of social impacts of water resources development projects. The questions presented in Chapter 5 for future research to address are designed to level out some of the more uneven qualities of the distributions found in Chapters 3 and 4.

B. State of the Research

The distribution sections of the summary of study characteristics and impact summary chapters point out some important facts about the current state of research on the social impacts of water resources development projects. Not much research has focused on those impacts of specific water resources development projects which have occurred. Earl Cook in the 1974 Reservoir Impact Study (see Bibliography) wrote,

> In searching the literature, one finds that the notion of trying to measure the total impact of a large water-resources project seems surprisingly novel. The few post-construction studies that have been made have looked at the decision process and the economic impacts, but generally have neglected environmental, social, and land-use effects. (p. 1-41)

The interest in the area has been increasing in the recent past (see Figure 3a) with the increasing inclusion of social impact assessment in water-related legislation and administrative regulations. There have been few repeaters in the area of research; only two groups -- the Institute for Social Science Research on Natural Resources, Utah State University (Wade Andrews) and the Water Resources Research Institute, University of Kentucky (Phillip Drucker) -- could be identified as having a continuing interest in the hindsight analysis of social impacts of water resources development projects. The few reports done by private consulting firms differed little from the university research; they were only slightly more economic in emphasis and made more of a point of trying to meet the needs of planners.

The predominance of university-based research in this field means the research on social impacts has been done within the confines of traditional academic disciplines. Sociology and anthropology have had the greatest share with political science and economics following a distant third and fourth (see Figure 3b). Several of the studies employ more than one discipline; for the most part, though, this means different disciplines prepare different parts of the report. There had been little truly interdisciplinary work on the social impacts of water resources development projects.

The state of research results (impacts) follows the pattern of disciplines outlined in Figure 3b. Because sociologists and anthropologists dominate the field, attitudinal impacts, especially relating to community cohesion prior to construction, have received the most attention. The range and nature of attitudes and knowledge about a project have been well-charted in the research. Researchers have also devoted some effort to analyzing the formation and activity

of interest groups opposing and supporting a project. In the post-construction phase, a wide variety of impacts on community cohesion and local service delivery have been identified; the work in these two areas has been some of the best done on the social impacts of water resources development projects. Equally well-covered has been the importance of a project to local aesthetic preferences.

While the research on social impacts of water resources development projects is strong in certain areas, it has certain distinct weaknesses. Construction phase impacts have been virtually ignored. The more economic impacts in the distribution and opportunity categories have received much less attention than the more sociological areas of community cohesion and local service delivery. In the community cohesion/pre-construction section, the overwhelming portion of the impacts identified are only indirectly related to community cohesion; little has been done to directly measure intra-community conflict. The relationship between water resources development projects and the provision of educational and cultural opportunities has also received very little attention.

These gaps in impact coverage result from various factors relating to the structure of the research on social impacts of water resources development projects. First, the types of projects discussed has been severely limited; one could almost call this a review of the social impacts of reservoirs. Very little has been done on canals, dredging, channelization, or non-structural flood control measures. Second, the research has been at best exploratory; each researcher has virtually started from scratch, as Earl Cook's statement above indicates. One result of the diffuse nature of the field has been a failure to identify the significant areas of research. There are not even accepted categories of impacts. Third, there has been little effort to explore and identify the full range of social impacts deriving from a water resources development project. For the most part researchers have stayed within the safety of their disciplinary boundaries. Fourth, there has been very little truly interdisciplinary study of the social impacts of water resources development projects. This has resulted in a neglect of cross-phase/cross-impact category impacts.

C. Prospects

These problems are difficult but not insurmountable. As indicated, the key to better results (and therefore better utility to the planner) is improving the structure of the studies. More emphasis should be placed on identifying the full range of social impacts deriving them project actions. This requires the use of

a holistic approach to the problem and a truly interdisciplinary team of researchers. Also, the research should be undertaken with a greater interest in meeting the needs of planners. This does not mean researchers should respond to the immediate short-run problems of the planner in doing social impact work. Instead the planner and researcher should work together to ensure maximum coverage of impacts and realistic evaluation of their significance.

The research on the social impacts of water resources development projects is at a critical stage. If the research follows its current trends the field will continue to fragment, leaving wide gaps in impact coverage both across phases and across categories. Using this review, planners can reverse this tendency. They can make sure researchers make best use of the existing research -- its strengths and its weaknesses. Planners can also incorporate, with the assistance of researchers, social impact data collection into normal reporting requirements for project actions. This would greatly enhance the researcher's ability to identify and evaluate significant perturbations in the society that were caused by the project. Moreover, through continued monitoring of the research using reviews such as this one, planners can better appreciate the consequences of project actions. When more different types of projects in more areas of the country have been studied using data generated for the purpose of analyzing social impacts, the planner will have a better foundation from which to evaluate the impacts of a specific project action in question. This in turn will improve the planning process and better enable the planner to meet the legislative and administrative requirement to evaluate effects on social well-being.

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